Version
2.0

NaViSet Administrator 2

User's Guide

NEC

Software Updates

Occasionally updates and enhancements to the *NaViSet Administrator* software will be made available. Use the *Check for updates* feature in the software to automatically see if a newer version is available (Internet connection required).

Technical Support and Feedback

For technical support with *NaViSet Administrator*, please check for any Frequently Asked Questions that may help to solve the issue. For additional help, please contact your NEC representative, or use the online feedback forms available at `www.necdisplay.com/navisetadministrator` in the US and Canada, and `www.nec-display-solutions.com/naviset` in Europe.

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USA and Canada: `www.necdisplay.com/navisetadministrator`

Europe: `www.nec-display-solutions.com/naviset`

Revision 130607

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Precautions:

- *NaViSet Administrator* allows many advanced display features and settings to be changed and reset. Care should be taken when making any adjustments to avoid mis-adjustment.

- The Windows computer controls in *NaViSet Administrator* allow a remote computer to be shut down and restarted without giving any warning to the currently logged in users. Unsaved files may be lost as a result. Extreme care should be taken when using these controls.

Note:

This document is intended to be used together with the User Manual for each display model, and is not intended as a substitute. Please see the display's User Manual for descriptions of how to use each control.

Supported Display Monitors

NaViSet Administrator supports the following NEC display models:

- **NEC desktop display models.**
- **NEC large-screen display series: X, P, V, S, and LCDxx20.**
- **NEC projector models with a LAN or RS232 connection.**

✎*Note:*

- **NEC E series of large-screen displays is <u>not</u> supported.**
- **Please see the NEC website for the latest listing of specific models.**
- **Supported features and functionality will depend on model.**

System Requirements

NaViSet Administrator has the following system requirements:

	Microsoft Windows
Operating System	32 and 64 bit versions of Microsoft Windows XP, Server 2003, Vista, Windows 7, and Windows 8.
LAN	Standard TCP/IP LAN interface. Static IP addresses required for most displays connected directly to LAN, unless name resolution (hostname) support is provided.
System Resources	At least 64MB available hard-disk space for installation. Approximately 50MB per 100 devices hard-disk space required for database storage. At least 96MB RAM (192MB recommended)
Software	Adobe Reader X or higher is recommended for viewing the User's Guide. Open Hardware Monitor (optional) for monitoring computer temperature and fan status. See Appendix C on page 102 for details.

Chapter

1

Introduction to NaViSet Administrator

Introduction

NaViSet Administrator is a network based control and asset management system for NEC display monitors and projectors. It supports the asset reporting, monitoring, and control of the following types of displays:

- **Desktop displays connected to a networked Windows computer via a standard video connection such as VGA, DVI, or DisplayPort.**

- **NEC large-screen displays connected to a LAN via the built in LAN connection.**

- **NEC large-screen displays connected to a networked Windows based computer via RS232.**

- **NEC projectors connected directly to a LAN via the built in LAN connection.**

- **NEC projectors connected to a networked Windows based computer via RS232.**

The *NaViSet Administrator* application is designed to run from a central location and provides monitoring, asset management, and control functionality of remote displays and Windows computers. It can be run continuously to provide automatic monitoring and control of devices with the use of automated tasks and alerts that can be run manually or set to run at specific times and intervals.

The application provides controls for accessing and adjusting many of the controls and settings on the various types of supported displays. Most controls available via the *On Screen Display* (OSD) of a display monitor are available via the *NaViSet Administrator* application. These controls can be adjusted interactively, or be made to perform customized operations at specific times via the use of *Tasks*. This allows very powerful automation function to be easily performed.

Tasks are operations that can query or perform commands one or more devices, and can be scheduled to run at particular times, or on demand, and also to continue running for a specific period of time and interval.

Tasks can be used to perform conditional queries on devices, which can in turn be used to provide alerts for abnormal conditions or events. Notification emails can be automatically sent to multiple recipients in the event of an alert condition.

Custom Reports of all of the connected devices can be created that contain information about each device and their configuration, and settings.

Features

Communications

Communications with the display devices is achieved either via the built in LAN connection (available on most large-screen and projector models), or via a host Windows computer that acts as an interface between the connected displays and the network.

For desktop display models, communications with the display is performed using the existing video signal cable connection to the host Windows computer via an interface called DDC/CI.

ⓘ *Info:* **Display Data Channel - Command Interface** *(DDC/CI) is a two-way communications link between the video graphics adapter and display monitor using the standard video signal cable. No extra cables are necessary. Special support is required in the video graphics adapter hardware and video driver in order to provide this functionality. DDC/CI is an industry standard developed by VESA (Video Electronics Standards Association).*

Large-screen and projector models can communicate via a host Windows computer using an RS232 connection to the computer. Most large-screen display models can also be daisy-chained via RS232, allowing multiple displays to share a single LAN connection.

See "Configuring Devices" on page 40 for a complete description of each of the different supported connection types and configurations.

Adding Devices

Display devices and Windows computers can be easily added to the NaViSet Administrator database using a variety of different methods.

- Windows computers can be added by querying an Active Directory Server, or enumerating the Windows network.

- Any type of device can be imported from a list in either a delimited text file, or Excel spreadsheet, as well as from another NaViSet Administrator file.

- Many projector models can be automatically detected on the network.

- Devices can be added by specifying an IP address range.

- Devices can also be added one at a time by entering their host names or IP addresses

Database

NaViSet Administrator uses a database to store information about all of the remote devices, access credentials, operation history, and logging information. The databases for different projects and networks can be loaded, saved, and can be transferred between different computers.

As devices are added and queried, the information gathered for each device is automatically stored in the internal database. The application includes database query functionality to generate reports about the devices. For example at the most basic level it can be used for asset tracking, such as compiling a list of the model names and serial numbers of displays. This can be expanded to include more information, such as the number of hours each display has been in use, the carbon savings and energy cost, and even the non-volatile Asset Tag string stored in each device.

Reports can be exported to Excel or delimited text files to facilitate the easy transfer of data for use with other applications.

Advanced Computer Monitoring and Control

For displays that are connected to a Windows computer, NaViSet Administrator can gather useful information about the computer and even control the computer power state. For example the computer make, model, serial number, available memory, OS version, CPU type, usage, and many more parameters can be collected and reported. A computer can even be restarted, shut down, and woken remotely from within the application. These operations can be scheduled to occur at specific times or intervals.

NaViSet Administrator supports the popular *Open Hardware Monitor* application, to gather additional useful information about a remote computer such as the internal main-board, CPU, and GPU temperatures and fan speeds. These parameters, just like any other monitor related parameter, can be used to create a conditional alert to inform an administrator of an abnormal situation, such as overheating or fan failure. These alerts can be notified by displaying an alert condition within the application, or by sending out a notification e-mail.

Note: Remote display and computer devices do not broadcast events back to the NaViSet Administrator application. All information is acquired by polling the device. Therefore alert conditions are discovered by periodically polling devices to query their condition.

Speed

In order to achieve a high operational speed when performing multiple operations on different remote devices, operations to different devices are performed in parallel. The software supports multiple simultaneous network connections to different devices, and operations are automatically queued and performed as soon as a connection is available. The maximum number of simultaneous network connections can be configured in the *Preferences* settings.

Benefits of using NaViSet Administrator

Some of the benefits of using NaViSet Administrator are:

- Unified support for NEC desktop displays, large-screen displays, and projectors, as well as Windows computers and non-NEC desktop displays.

- Reduction in technical support times and costs by accessing configuration settings for displays remotely over the network, allowing many problems to be diagnosed and corrected without having to physically access the device.

- Reduction in total power consumption by providing remote power management functions in order to turn displays on or off. This feature can be fully automated so that the power state for multiple displays can be controlled at specific times of the day.

- Settings and parameters can be read directly from a display, thus providing detailed information about the display and its usage, such as its current settings and status. For example the total time that a display has been powered on, or in a power saving mode, can be read and compiled into a report along with many other items such as the model name, serial number, and date of manufacture.

- Powerful asset management with the use of an electronic Asset Tag that allows a text string to be permanently stored within the display's memory. This text string could, for example, be a conventional asset tracking code, company name, department name, phone number etc. This can then be read by NaViSet Administrator and used for asset tracking over a network. It can normally only be altered or erased with the use of NaViSet Administrator, thus providing a more secure method of asset tracking than conventional physical asset tags.

- The current setting values of all of the available controls in a display can be read, stored in the database, and reported, thus providing a convenient snapshot of the configuration of each display.

- Configuring the settings in multiple displays to a standard can be done easily by creating a task with the required setting values, thus providing a simple way to deploy a large number of displays with a standard set of settings.

- Unauthorized or unintended adjustment of display monitors can be reduced by disabling the On Screen Display (OSD) control buttons on a display.

- Alerts conditions can be automatically generated if a parameter on a device goes outside a specified range or value. For example an administrator can be notified via email if a projector's lamp is reaching the end of it's operational lifetime, or has failed.

- Basic information about displays connected to Windows computers via standard video connections such as VGA, DVI, and Display Port, can be read even without installing any additional software. This includes the make, model, serial number, resolution and date of manufacture. The computer can also be shut down, restarted, and a Wake-on-LAN command issued.

- By installing the included *DDC/CI WMI Provider* on a Windows computer, more detailed information about all connected displays can be read. Additionally, two-way control of NEC displays is available via standard video connections such as VGA, DVI, and Display Port.

Installing NaViSet Administrator

The NaViSet Administrator system includes the necessary remote software components to facilitate the various connection methods to different devices. These components are included on the install media and are available from the auto-run menu system, or by running the corresponding setup application directly.
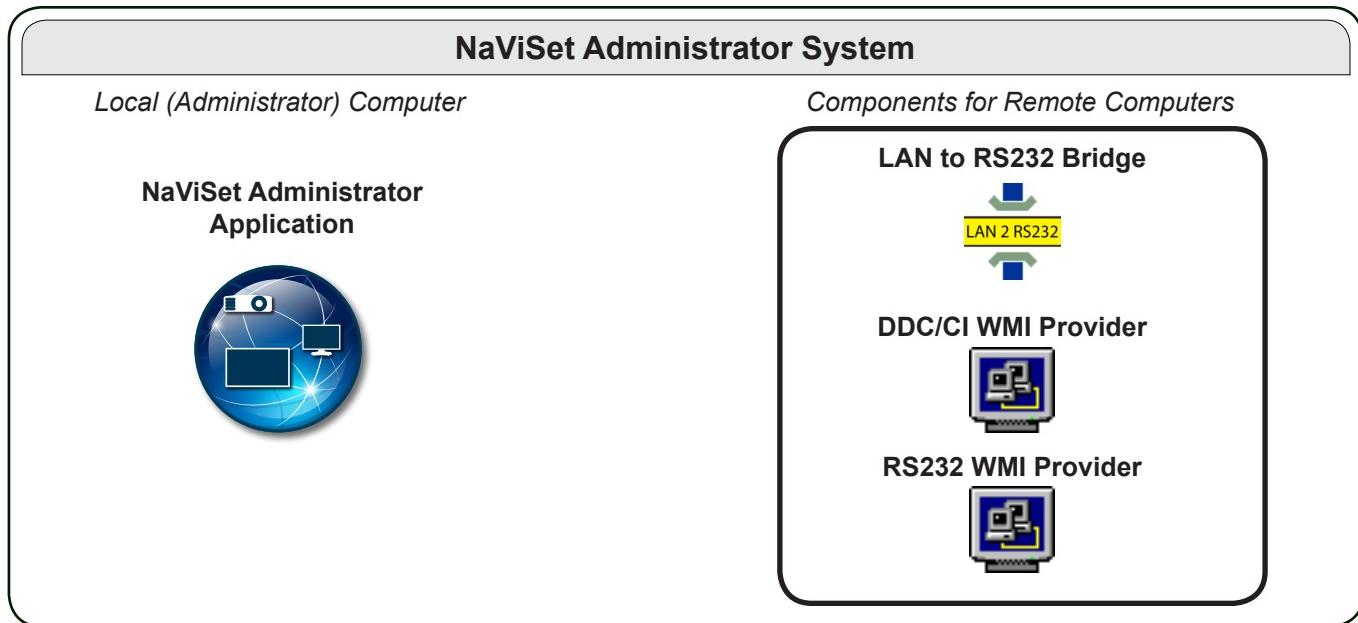
NaViSet Administrator application: The main application should be installed on the administrator's computer, and will store all of the configuration and information gathered from the various remote devices in a local database file.

Components for Remote Computers

LAN to RS232 Bridge: Is a utility that provides two-way communications via LAN to NEC large-screen displays or projectors that are connected to the remote computer via an RS232 connection. See Appendix D on page 104 for more information.

DDC/CI WMI Provider: Provides two-way communications with displays connected directly to a Windows computer. See "Desktop display(s) connected to Windows Computer" on page 42, and Appendix F on page 110 for more information on WMI Providers. This installer can be run in silent mode using the command line `setup /S`.

RS232 WMI Provider: Provides an alternate method of two-way communications with NEC large-screen displays connected to a Windows computer via an RS232 connection. See Appendix A on page 99 for a comparison of the various connection methods for large-screen displays and the features and benefits for each. See also Appendix E on page 107 for information on configuring settings used by the RS232 WMI Provider.

✎*Note:* Please see the README files included with each component for detailed information on the system requirements and configuration settings.

Configuration Overview

The following diagram shows the basic different configurations of devices supported by NaViSet Administrator and the related components that must be installed.
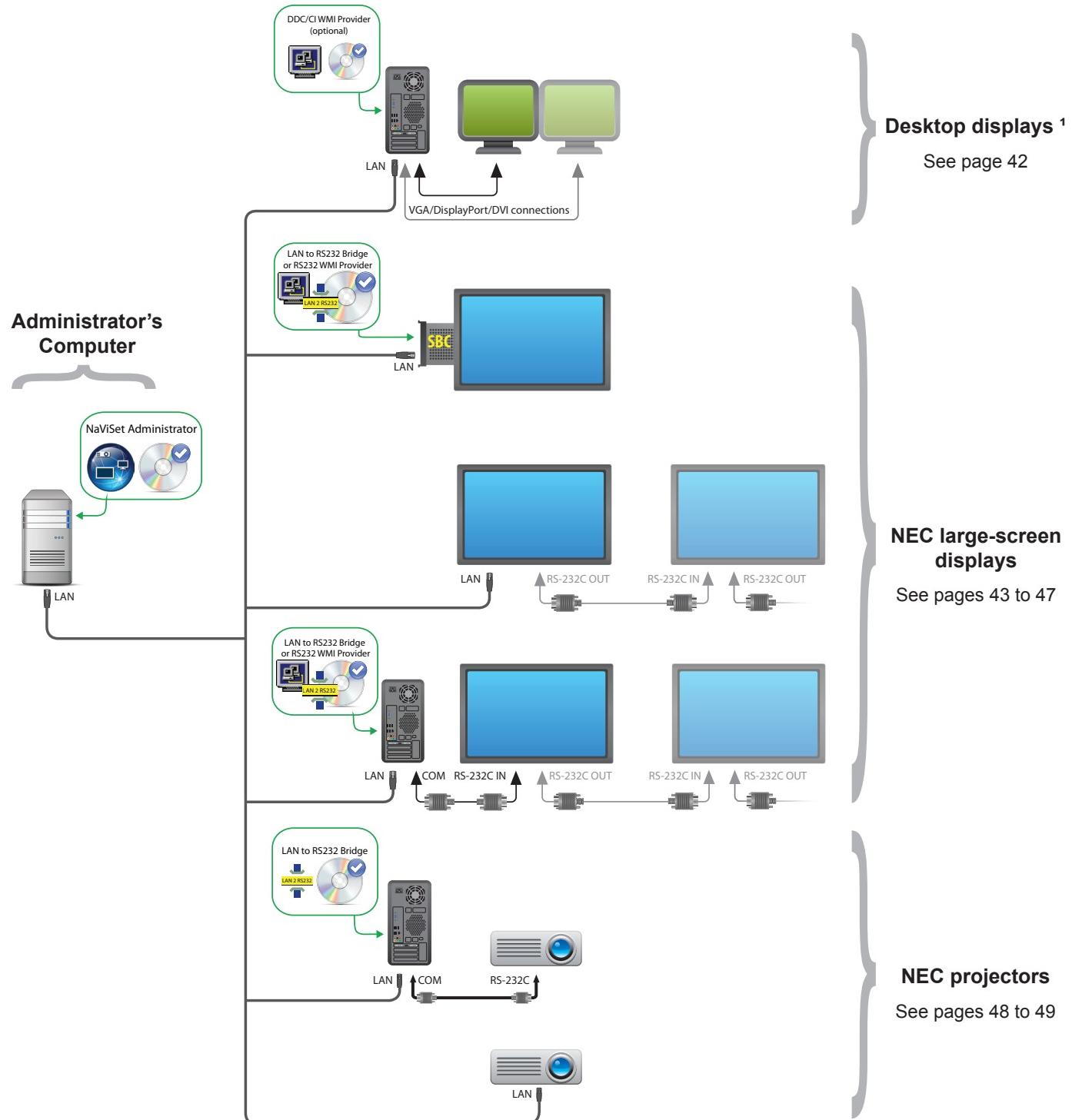
[1] Includes limited support for NEC large-screen displays. See Appendix A on page 99 for details.
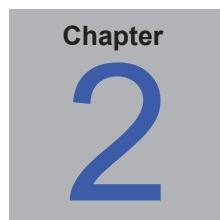
<table>
<tr><td>**Chapter**
2</td><td># User Interface Overview</td></tr>
</table>

Main Window:

The main application window is divided into a *Device Tree* on the left and a *Dock Window Area* containing dock windows on the right. Multiple dock windows are stacked on top of one another and tabbed so they can be easily identified and selected.

By default NaViSet Administrator opens with two dock windows, *Report Manager* and *Task Manager*. There are several other types of function-related dock windows that use this area and all are described in the appropriate sections of this document.
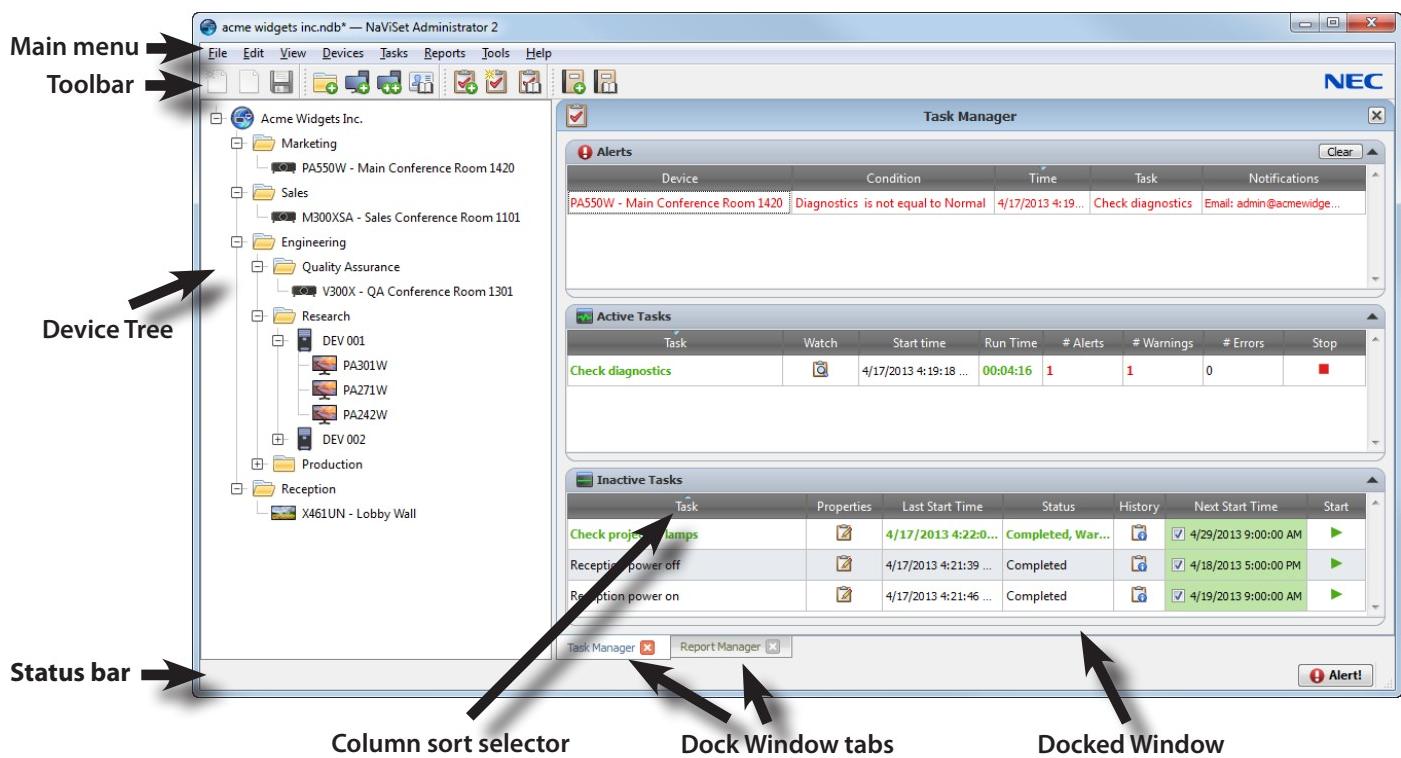
A toolbar at the top of the main window provides convenient shortcuts to many of the functions. See "Menus" on page 20 for a description of each, or mouse over the toolbar icons to see the tooltip descriptions.

A status bar at the bottom of the main window shows descriptions of menu items when selected. If enabled in the application *Preferences*, the status bar also shows information about connections to devices that are currently being processed and waiting to be processed. See "General Settings" on page 79 for more information.

Device Tree

The Device Tree on the left of the main window represents all of the displays and computers that are in the current database. Extra information on each device in the tree is shown in tooltips, which can be seen by mousing over each item.
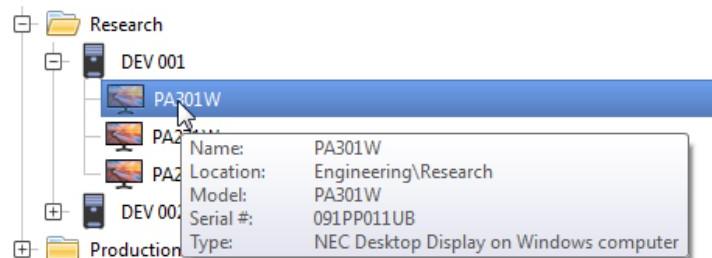
Groups

Devices can be grouped to help organize collections of displays and computers, such as physical location (for example by building and floor), or organizational groups (for example "Sales" and "Marketing").

Creating Groups: Groups can be created by either selecting **Add Group...** from the **Devices** menu, or by right-clicking in the Device Tree and selecting **Add Group...**. Groups will be added as a branch to the currently selected item in the Device Tree.
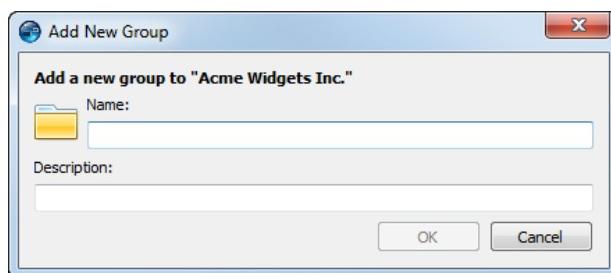
Rearranging Groups: Groups can be rearranged by clicking and dragging a Group's folder icon to another part of the Device Tree.
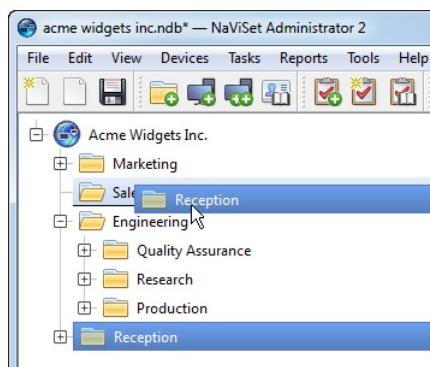
Renaming Groups: Groups can be renamed by either:

- Double-clicking the group in the Device Tree

- Right-clicking a group in the device tree and selecting Rename.

- Selecting Rename from the Edit menu while the group to be renamed is currently selected.
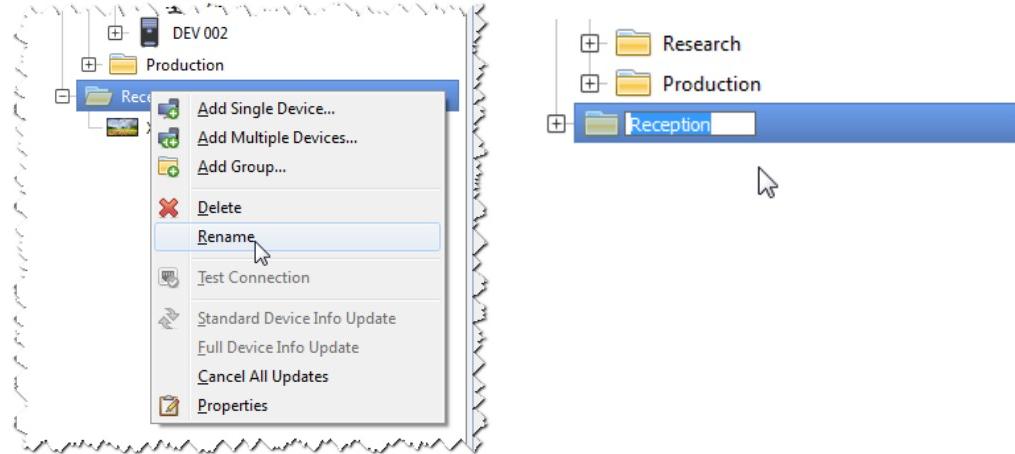
Expanding Groups: Groups can be expanded and collapsed by clicking the ⊞ icon next to the group name.

Devices

Each device in the Device Tree is represented by an icon as shown in the following table:

Icon	Description
	Windows computer
	NEC desktop display connected to a Windows computer
	NEC medical display connected to a Windows computer
	Read-only Display: A display connected to a Windows computer with read-only connection (DDC/CI not available) or a non-NEC display
	Single NEC large-screen display
	Daisy chain host: A virtual device for daisy-chained NEC large-screen displays. See page 26 for a full description.
	NEC large-screen display connected in a daisy chain
	NEC projector

Indicators on the icons represent certain states of the device at the last time it was accessed, as shown in the following table:

Indicator	Meaning
None	The device hasn't been accessed since the database has been loaded.
Green	The device was powered on, and a *Standard* or *Full Update* was successful.
Yellow	Communications with the device during a Standard or Full Update was partially successful; however it may not have been powered on. As a result not all of the device information was read. This is also shown if two-way communications with the device was not possible.
Warning	Communications with the device failed and the update was unsuccessful. This could be because: • The device is disconnected from the network. • The device isn't powered on. • The connection settings have changed since the device was added. • Incorrect user credentials are being used.
Flashing	The background of a device icon flashes when a confirmation message is being shown that will impact the device, such as deletion, creating a new reference, or updating the device's connection settings.
DEV 001 [Cancel] Updating	A progress bar and *Cancel* button are shown while a device is being updated. Clicking the *Cancel* button will cancel the update.

Adding Devices: Devices are added to the Device Tree by using either the ***Devices*** menu, or right-clicking an item in the device tree and selecting either ***Add Single Device...*** or ***Add Multiple Devices...*** See page 23 for how to add different devices.

Rearranging Devices: A device can be moved between different groups by clicking the device and dragging it onto a different folder.
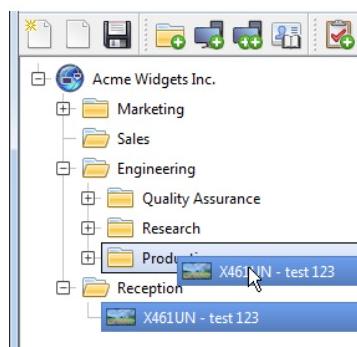
Renaming Devices: Devices can be renamed by either:

- Right-clicking on the device in the device tree and selecting *Rename*.

- Selecting *Rename* from the *Edit* menu while the device to be renamed is currently selected.

✎*Note:* *Renaming a device in the device tree does not change the **Asset Tag** stored in the display. To change the **Asset Tag** stored in the display (if supported), select **Asset Tag** from the **Display Device Information** list group in the controls shown in the Custom tab of the Device Properties window.*

Opening a Device Properties Window: Double-clicking a device in the device tree will open the device's properties window in the dock window area. The device properties window can also be opened by right-clicking the device and selecting *Properties* from the context menu.

There is no limit to the number of device properties windows that can be opened and docked at the same time.
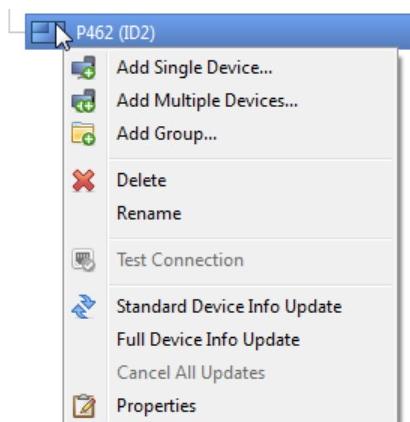
Dock Window Area

The dock window area on the right side of the main window can contain any number of Dock Windows. By default, NaViSet Administrator opens with two docked windows, *Task Manager* and *Report Manager*. Examples of other dock windows are *Device Properties Windows* and the *Task History Viewer*.

Device Properties Windows are opened by either double-clicking a device icon in the device tree, or right-clicking a device and selecting *Properties* from the menu.

Docked windows can be moved outside the dock window area to anywhere on the desktop by clicking and dragging the window's title bar. Windows that are no longer docked are called floating windows. Floating windows can be moved back into the dock window area by clicking and dragging the title bar to move the window over the dock window area.

The ability to move dock windows to anywhere on the desktop provides a lot of flexibility, maximizes efficient use of the available desktop, and allows individual items to be given prominence on the desktop if desired.
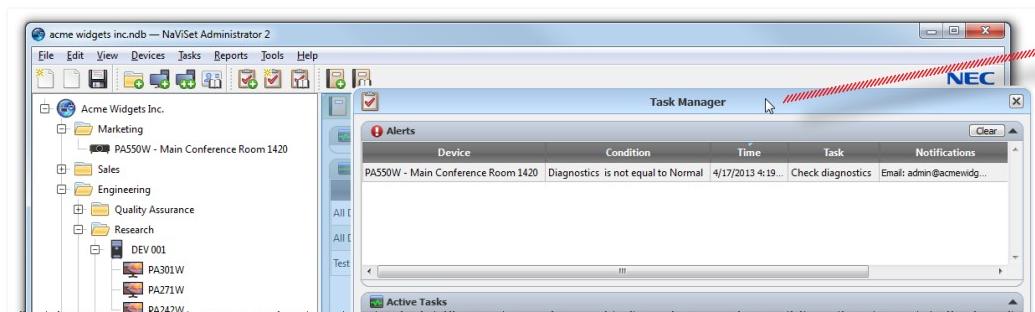
Click & Drag Tab's Title Bar to undock into a window.

Docked windows can be closed by clicking the ❌ button on the tab list, or the x button in the dock window's title bar.

Both docked windows and floating windows can be hidden or shown by selecting them from the **View** menu.

Device Properties Window

Each Device Properties Window consists of a series of tabs which divide the device information, network settings and numerous controls into logical categories, similar to those in the device's OSD (On Screen Display).
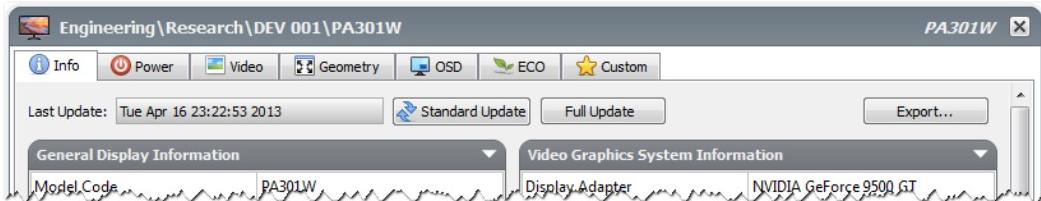
The number and types of tabs that appear for a device will depend on the capabilities of the device. Controls on the tabs allow changes to be made to the device settings in real-time. Most frequently used controls are shown on individual tabs such as **Video**, **Audio**, and **Power** etc. More infrequently used controls are available on the **Custom** tab.

See "Controlling Devices" on page 50 for a complete description of the device property tabs.

Task Manager Window

The *Task Manager* window shows:

- Tasks that are currently inactive (not currently being processed/executed)
- Tasks that are currently active (being processed/executed)
- Any alert conditions that have occurred while running any tasks

See "Tasks" on page 58 for more information on Tasks and the Task Manager.

Report Manager Window

The *Report Manager* window shows:

- Inactive Reports that are not currently being run
- Active Reports that are currently being run

See "Reports" on page 73 for more information on Reports and the Report Manager.

Menus

File menu

New - Creates a new database file.

Open... - Opens an existing database file.

Save - Saves the current database file.

Save As... - Saves the current database to a different file name.

Edit menu

Copy - Copies data from the currently selected table to the Windows clipboard.

Paste - Not currently used.

Delete - Deletes the currently selected group or device in the device tree.

Rename - Renames the currently selected group or device in the device tree.

Standard Device Info Update - Performs a *Standard Update* on the currently selected device tree items.

Full Device Info Update - Performs a *Full Update* on the currently selected devices in the device tree.

Cancel All Updates - Cancels all *Standard* or *Full Updates* that are currently being performed on any devices.

Properties - Opens the *Device Properties Window* for the currently selected device in the device tree.

View menu

Status Bar - Hides or shows the status bar at the bottom of the main window.

Toolbars - Hides or shows the toolbar buttons.

Devices menu

Add Single Device... - Adds a new device to the database. See "Adding Single devices" on page 23.

Add Multiple Devices... - Adds several devices to the database. See "Adding Multiple Devices" on page 29.

Add Group.... - Adds a new Group to the device tree. See "Groups" on page 15.

Test Connection - Tests the connection to a device to make sure it is accessible on the network.

Credential Library... - Opens the Credential Library. See "Credential Library" on page 56.

Tasks menu

New Task... - Creates a new Task. See "About Tasks" on page 58.

Task Builder Wizard... - Creates a new task using a wizard interface to guide.

Task Library... - Opens the Task Library. See page 59.

Show/Hide Alerts - Shows or hides the Alerts list. See page 60.

Show/Hide Active Tasks - Shows or hides the Active Tasks list. See page 59.

Show/Hide Inactive Tasks - Shows or hides the Inactive Tasks list. See page 59.

Reports menu

New Report... - Creates a new Report. See "About Reports" on page 73.

Report Library... - Opens the Report Library. See page 73.

Show/Hide Active Reports - Shows or hides the Active Reports list. See page 74.

Show/Hide Inactive Reports - Shows or hides the Inactive Reports list. See page 74.

Tools menu

Preferences - Opens the application Preferences window. See "Preferences" on page 79.

Help menu

Help - Opens the online help system.

Check for Updates - Checks with the NEC software update system to see if a newer version is available. An Internet connection is required.

About NaViSet Administrator 2... - Displays the software and database version information.

Chapter

3
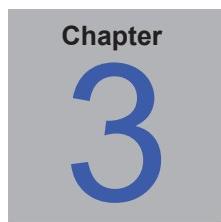
Devices

Supported Devices

NaViSet Administrator supports the following basic types of networked devices:

- Windows computers and connected display(s), both NEC and other manufacturers
- NEC large-screen displays
- NEC projectors

A more detailed description of each of these device types is given below.

Windows computers

A networked Windows computer that is using the WMI (Windows Management Instrumentation) protocol to communicate information about the connected displays. WMI support is built into Windows.

-

This includes the following connections types:

- A Windows computer with one or more displays connected directly via VGA, DVI, HDMI, or DisplayPort. The included *DDC/CI WMI Provider* may be optionally installed to provide two-way communications with the displays. Any displays connected to the computer will automatically be detected and added to the device tree as branches from the computer device node.
    -
- A Windows computer with one or more NEC large-screen displays connected via RS232. The included *RS232 WMI Provider* must be installed on the computer.
    -
    -
    -

NEC large-screen displays

NEC large-screen displays using one of the following connection types:

- An NEC large-screen display that is connected via the built in LAN connection.
    -
- An NEC large-screen display that is connected via the built in LAN connection, and is also daisy-chained to other large-screen displays via RS232.

✎ *Note:* *Daisy-chained large-screen displays are added as a single device using Add Single Device in the Devices menu.*

-
- An NEC large-screen display that is connected to a Windows computer via RS232 and is running the NEC LAN to RS232 Bridge application.

- See page 44 for details on configuring the displays.

- An NEC large-screen display that is connected via RS232 to a Windows computer that is running the NEC LAN to RS232 Bridge application, and daisy-chained to other large-screen displays via RS232.

✎Note: *Daisy-chained large-screen displays are added as a single device using Add Single Device in the Devices menu.*

- See page 44 for details on configuring the displays.

- An NEC large-screen display with an SBC (Single Board Computer) that is connected via the LAN connection on the SBC.

- See page 44 for details on configuring the displays.

- An NEC large-screen display with an SBC (Single Board Computer) that is connected via the LAN connection on the SBC, and is also daisy-chained to other large-screen displays via RS232. The SBC is running either the *LAN to RS232 Bridge* application or the *RS232 WMI Provider*.

✎Note: *Daisy-chained large-screen displays are added as a single device using Add Single Device in the Devices menu.*

- See page 47 for details on configuring the displays.

Projectors

An NEC projector connected to LAN using one of the following connection types:

- An NEC projector that is connected via the built in LAN connection.

- See page 48 for full details.

- An NEC projector that is connected via RS232 to a Windows computer that is running the *LAN to RS232 Bridge* application.

- See page 49 for full details.

Adding Devices

Devices can be added to the device tree either individually, or as multiple devices added simultaneously. When adding a large number of devices it is recommended to use the *multiple device* methods.

One exception is when adding multiple large-screen displays that are daisy-chained via RS232. In this case all of the displays are added simultaneously as one connection device, known as the *daisy-chain host* (see "About Daisy Chain Hosts" on page 26), and <u>must</u> be added as a single device.

✎Note: *For the best results when adding devices, the computers and/or displays should be powered on. This will ensure all of the information that is necessary for NaViSet Administrator to provide full functionality is read and stored in the database.*

Adding Single devices

To add single devices to the device tree use either the **Devices** menu, or right-click an item in the device tree and select **Add Single Device...**, or click the ▦ toolbar button. The **Add a device to** dialog will appear.

All devices added using this method must be powered on and accessible.

✎Note: *Devices added using this method are added to the nearest currently selected group in the device tree.*

Adding a single Windows computer on LAN (WMI)
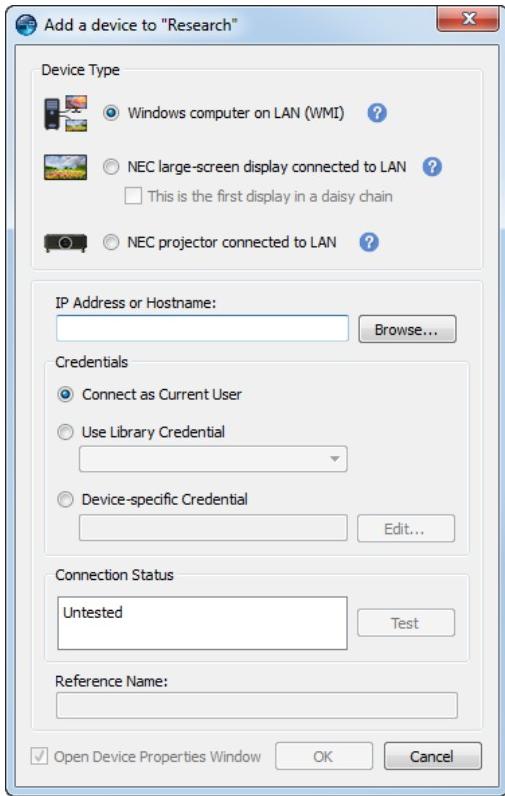
Select **Windows computer on LAN (WMI)**.

Enter the computer's network name or IP address, or click **Browse...** to view and select a computer currently available on the LAN.

Note: It may take several seconds after clicking the **Browse...** button for the dialog to appear while the network is enumerated. Only computers that are currently available on the LAN will be shown.

If you are currently logged in as a domain administrator and have credential access to the remote computer, then select **Connect as Current User.**

If the remote computer requires different credentials, then either select **Use Library Credential** if the credentials required have already been added to the **Credential Library**, or select **Device-specific Credential** to enter new credentials and optionally save to the *Credential Library*. See page 56 for more information on using the *Credential Library*.

Click the **Test** button to confirm the network connection. If the connection is successful, then the computer's name will be automatically entered into the *Reference Name*. The *Reference Name* is the name used to identify the computer in the device tree, and can be edited if desired before it is added to the device tree, or later on by renaming the device in the device tree.

Click **OK** to add the Windows computer to the device tree. Any displays connected to the Windows computer will be detected automatically and added to the device tree under the computer node.

Troubleshooting

If an error occurred when performing the *Test* operation see the troubleshooting steps "Problem: Unable to connect to a Windows Computer via WMI" on page 97.

Adding NEC large-screen display(s) connected to LAN
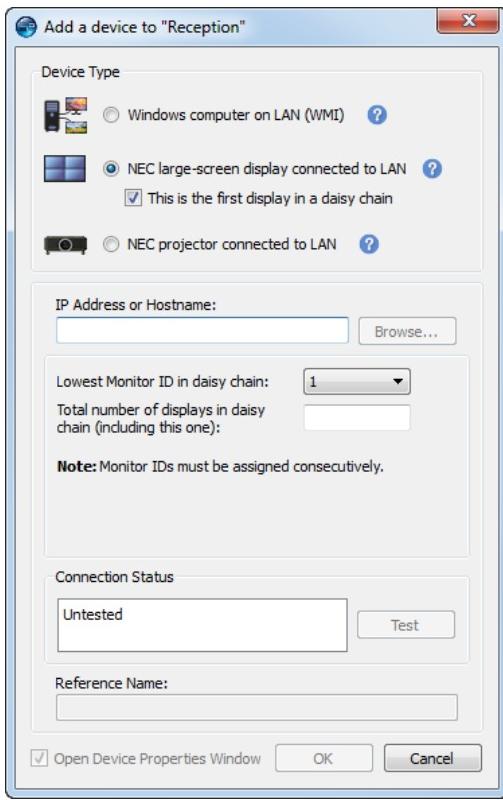
Select **NEC large-screen display connected to LAN**.

Enter the IP address or hostname of the large-screen display. If the *LAN to RS232 Bridge* is being used, enter the computer name or IP address of the Windows computer.

If the Monitor ID of the display is not known, then leave the **Monitor ID** selected to **Auto Detect**, otherwise select the *Monitor ID* of the display as configured on the display's OSD.

If the large-screen display connected to LAN also has other displays daisy-chained from it, then select **This is the first display in a daisy chain** and select the lowest Monitor ID in the daisy-chain. Next enter the **Total number of displays in the daisy-chain**.

Note: When using daisy-chains, the Monitor IDs must be numbered uniquely and sequentially.

Click **Test** to confirm the network connection and display detection. If the connection for a single display is successful, then the model name will be automatically entered into the *Reference Name*, together with it's Asset Tag text (if set). If the connection for multiple displays is successful, *Daisy Chain Host* will be automatically entered as the reference name. The **Reference Name** is the name used to identify the display in the device tree, and can be edited if desired before it is added to the device tree, or later on by renaming the device in the device tree.

Note: Changing the **Reference Name** text, changes the name that will appear for the display in the device tree, and will not change the **Asset Tag** stored in the display. To change the **Asset Tag** stored in the display, select **Asset Tag** from the **Display Device Information** list group in the controls shown on the **Custom** display property tab once the display has been added.

Click **OK** to add the display(s) to the device tree.

Troubleshooting

If an error occurred when performing the *Test* operation, see the troubleshooting steps "Problem: Unable to communicate with an NEC large-screen display" on page 97.

About Daisy Chain Hosts

When daisy-chained large-screen displays are added, a virtual device called a ***Daisy Chain Host*** is created in the *device tree* with the ▦ icon. All of the actual daisy chained displays are branches from this device with the icon ▤.

The ***Daisy Chain Host*** device is a placeholder for the connectivity information for the entire daisy chain, as follows:

- IP Address or Hostname of the LAN connection on the first display on the daisy chain

- Lowest Monitor ID in the daisy chain

- Total number of displays in the daisy chain

The Monitor IDs for each of the displays in the daisy chain are shown in parentheses in the display reference names in the device tree.

Adding a single NEC projector connected to LAN
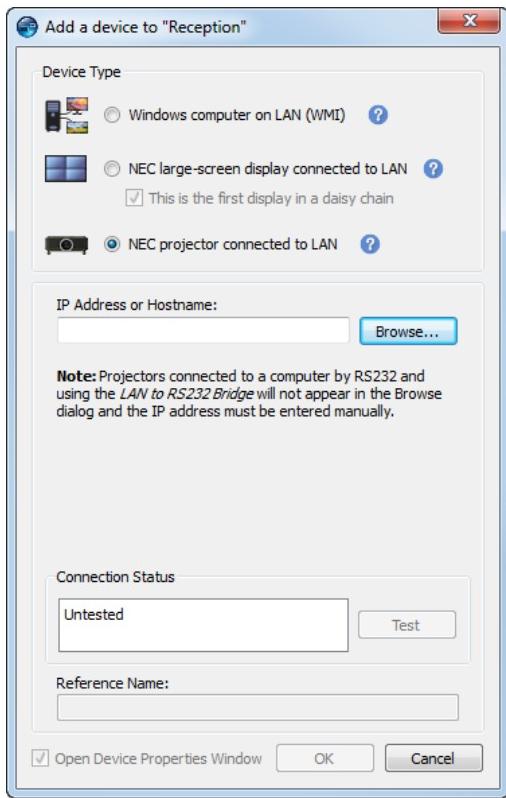
Select **NEC Projector connected to LAN**.

Enter the *IP address* or *hostname* of the projector, or click **Browse** to automatically detect projectors that are connected directly to the LAN.

If the *LAN to RS232 Bridge* is being used, enter the computer name or IP address of the Windows computer.

Note: Projectors connected to a computer by RS232 and using the LAN to RS232 Bridge are not be able to be detected using the Browse function. Not all projector models support the automatic network enumeration feature. In both cases the projector or computer IP address / computer name must be entered manually.

Browse for Projector Dialog
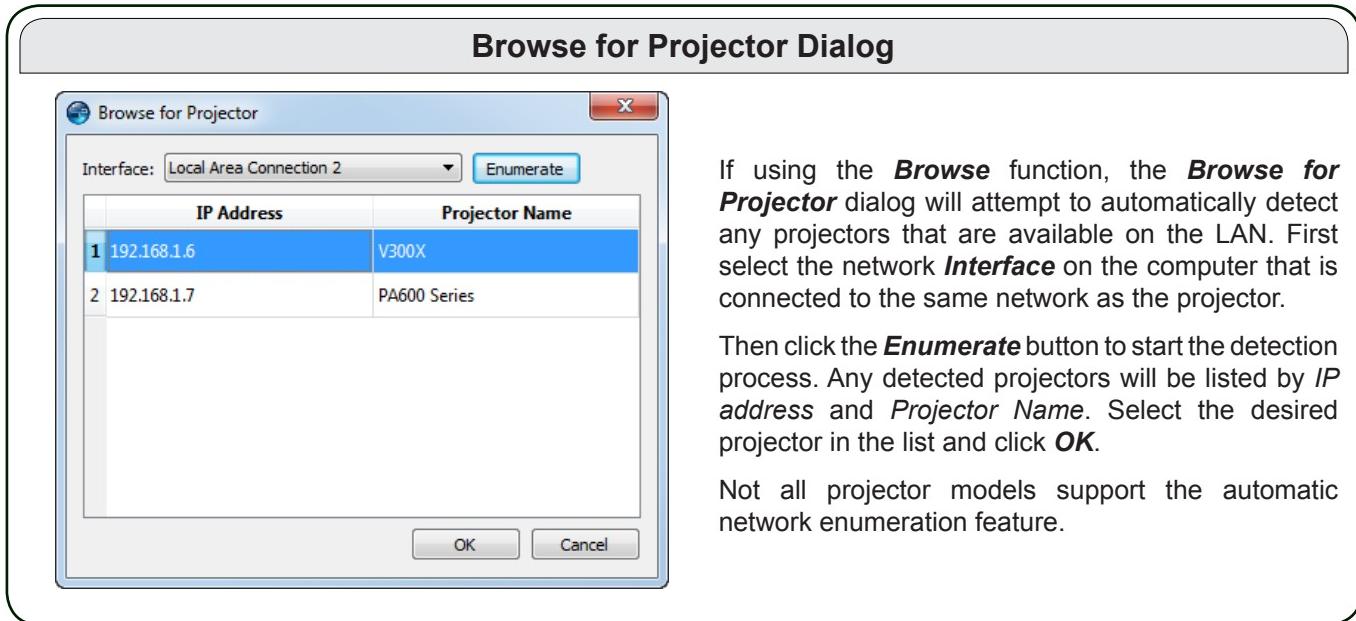
If using the **Browse** function, the **Browse for Projector** dialog will attempt to automatically detect any projectors that are available on the LAN. First select the network **Interface** on the computer that is connected to the same network as the projector.

Then click the **Enumerate** button to start the detection process. Any detected projectors will be listed by *IP address* and *Projector Name*. Select the desired projector in the list and click **OK**.

Not all projector models support the automatic network enumeration feature.

Click **Test** to confirm the network connection. If the connection is successful, then the model name of the projector will be automatically entered into the *Reference Name*, together with it's *Asset Tag* text (also known as *Projector Name*). The *Reference Name* is the name used to identify the projector in the device tree, and can be edited if desired before it is added to the device tree, or later on by renaming the device in the device tree.

✎Note: Changing the **Reference Name** text, changes the name that will appear for the projector in the device tree, and will not change the **Asset Tag / Projector Name** stored in the projector. To change the **Asset Tag / Projector Name** stored in the projector, select **Asset Tag** from the **Display Device Information** list group in the controls shown on the **Custom** display property tab once the projector has been added.

If the connection is successful, then click **OK** to add the projector to the device tree.

Troubleshooting

If an error occurred when performing the *Test* operation, see the troubleshooting steps "Problem: Unable to communicate with an NEC projector" on page 98.

Adding Multiple Devices

If there are several devices to be added, then adding them using the *Add Multiple Devices* dialog is easier and more efficient than adding one by one using the *Add Single Devices* function.

To add multiple devices to the device tree, use either the **Devices** menu, or right-click an item in the device tree and select **Add Multiple Devices...** , or click the ⊞ toolbar button. The **Add Multiple Devices** dialog will appear. Select the type of display and connection to be added from the tabs at the top.

✎*Note:* *Large-screen displays that are daisy-chained via RS232* <u>must</u> *be added as a single device, and cannot be added using Multiple Devices. The only exception is when using the RS232 WMI Provider which will automatically add all connected displays when the host computer is added.*

Adding multiple Windows computers (WMI)

Windows computers can be added in several different ways:

1. Active Directory

2. Network Enumeration

3. Import from File

4. IP address range
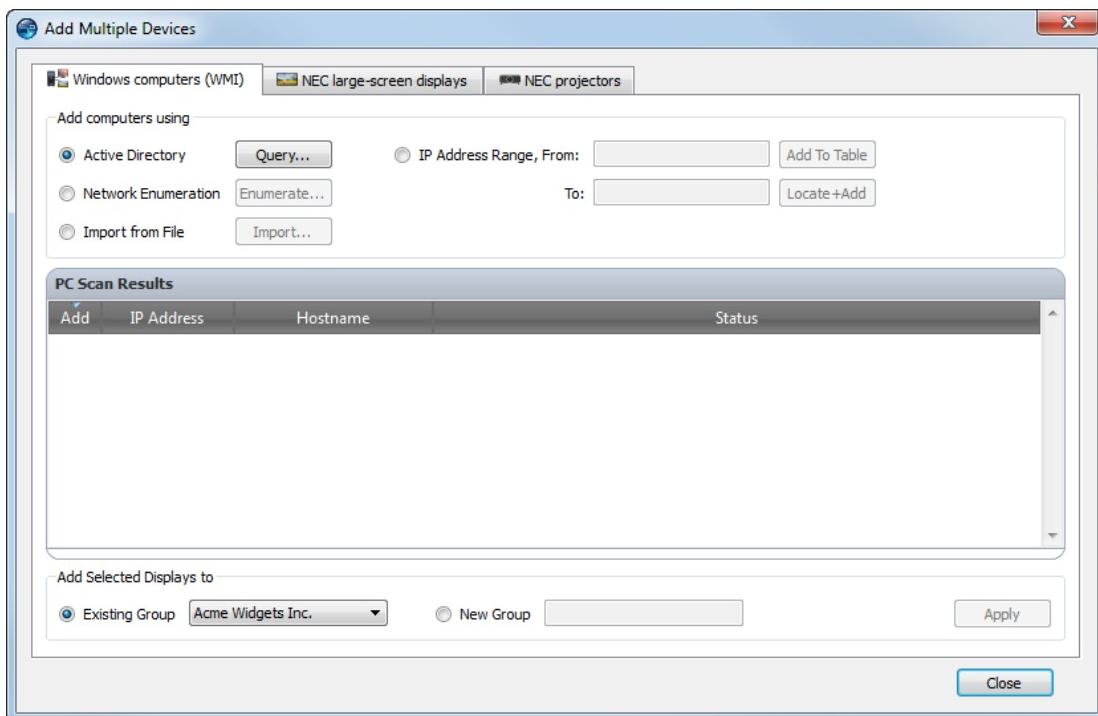
Whenever computers are added using any of the above methods, a *Credentials* dialog will be displayed. Access credentials to the computer must be specified using one of the following options:

- The currently logged in user's credentials

- An existing credential from the *Credential Library* (see page 56 for more information)

- A device-specific credential to be entered, and optionally added to the *Credential Library*
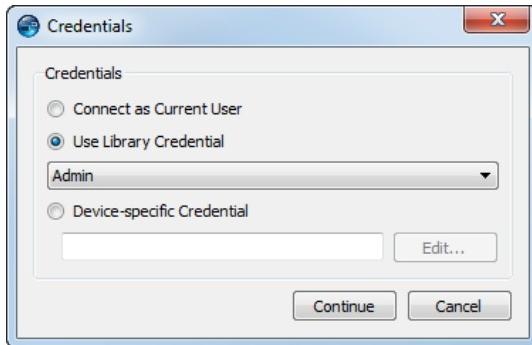
✎*Note:* The same access Credentials are applied to all of the computers added together. To use different credentials on different computers, add them separately by repeating this procedure.

Once the computers are added to the table, individual computers can be selected or skipped from being added to the device tree by using the ✔ *Add* checkbox on each row of the table.

The computers can be added to either an existing group in the device tree or a new group, created by selecting *New Group* and entering the new group name.

Click *Apply* to add the computers to the device tree. The computers will be queried in the background to gather information about the computer and the connected displays.

Repeat if necessary to add other computers using different access credentials.

Add computers using Active Directory

If the Windows network is part of a domain with an *Active Directory* server, then the server can be queried to retrieve a list of computer names in the domain. This is a fast and reliable way to add computers. The names of computers that are currently not available on the network can be retrieved via Active Directory.

Select **Active Directory** and click the **Query...** button to open the *Active Directory Query* dialog.

Active Directory Query Dialog

ADSI Object Binding - Defines the address and credentials used to connect to the Active Directory Server. Select *Use Default* unless connecting to a different domain or credentials than the default.

Query - Sends a query to the Active Directory Server and lists the results.

Wildcard Filters - Allows the query results to be filtered by applying text wildcards to the Computer Name, Description, Operating System and OS Version columns.

Import Selected and **Import All** - Adds the items to the table, after the access credentials have been specified.

Add computers using Network Enumeration

Windows computers that are currently online on the LAN can be enumerated and added in the same way network devices are found and shown in the Windows Network list. A computer must typically be running and have been connected to the LAN for several minutes in order to appear in the *Network Enumeration* list. The network enumeration can take up to several minutes to perform depending on the number of devices on the network.

Select **Network Enumeration** and click the **Enumerate...** button to open the *Network Enumeration* dialog.

Network Enumeration Dialog
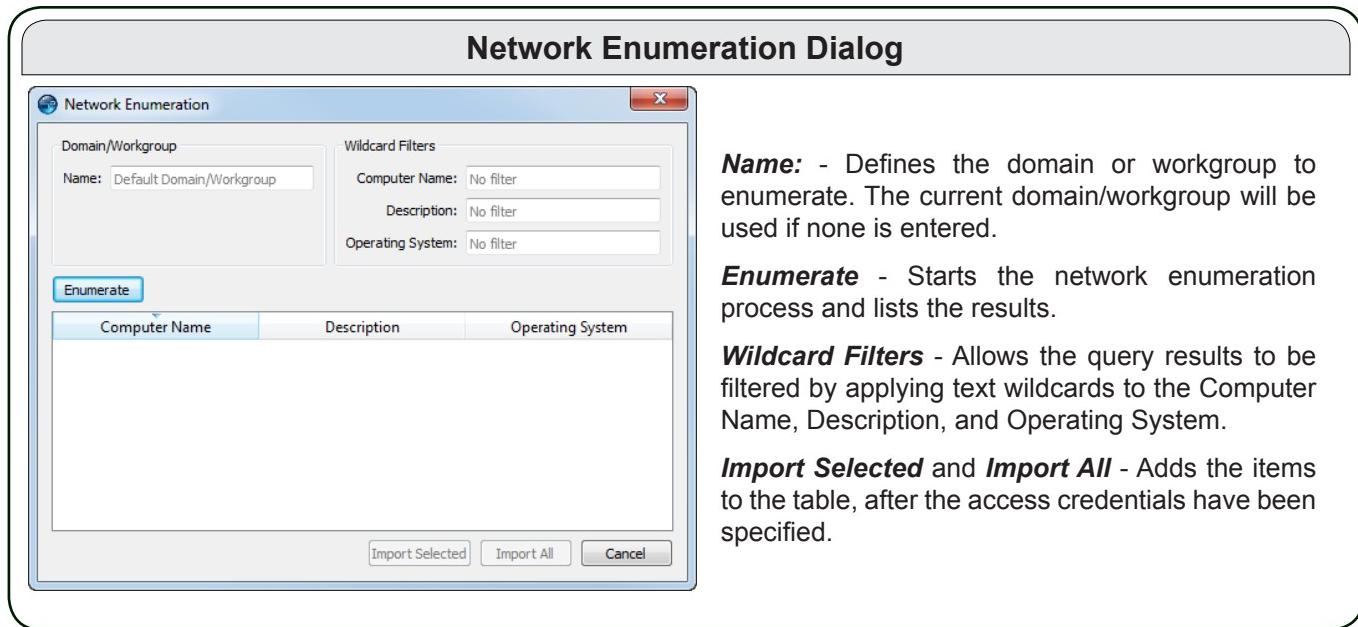
Name: - Defines the domain or workgroup to enumerate. The current domain/workgroup will be used if none is entered.

Enumerate - Starts the network enumeration process and lists the results.

Wildcard Filters - Allows the query results to be filtered by applying text wildcards to the Computer Name, Description, and Operating System.

Import Selected and **Import All** - Adds the items to the table, after the access credentials have been specified.

Add computers using Import from File

A list of IP addresses and/or computer names can be imported from any of the following file types:

- A column of an Excel spreadsheet file
- A delimited text file
- Another NaViSet Administrator 2 database file

Select **Import from File** and click the **Import...** button to open the *Import Devices* dialog.

Import Devices Dialog - Windows computers

Import File: - Shows the file name selected to import the list from.

Select... - Selects the file to import from.

Select column containing IP addresses or hostnames - Lists the column names from the first row of data. Select the column to use as the IP address or hostname (computer name).

Devices: - Shows all items, or rows in the currently selected column.

Add to Table - Adds the selected items to the table, after the access credentials have been specified. Connectivity to the computers is not verified. Use this to add computers that may not currently be available on the network.

Locate + Add to Table - Adds the selected items to the table, after the access credentials have been specified. Connectivity to the computers is verified as they are added. This may take several minutes to complete if many computers are being added.

Add computers using IP Address Range

A range of computer IP addresses can be specified and added. Enter the lower IP range in *From*, and the upper range in *To*.

Click *Add to Table* to add all of the IP addresses in the range specified to the table, after the access credentials have been specified. Connectivity to the computers is <u>not</u> verified. Use this to add computers that may not currently be available on the network.

Click *Locate+Add to Table* to add all of the IP addresses in the range specified to the table, after the access credentials have been specified. Connectivity to the computers is verified as they are added to the table. This may take several minutes to complete if many computers are added.
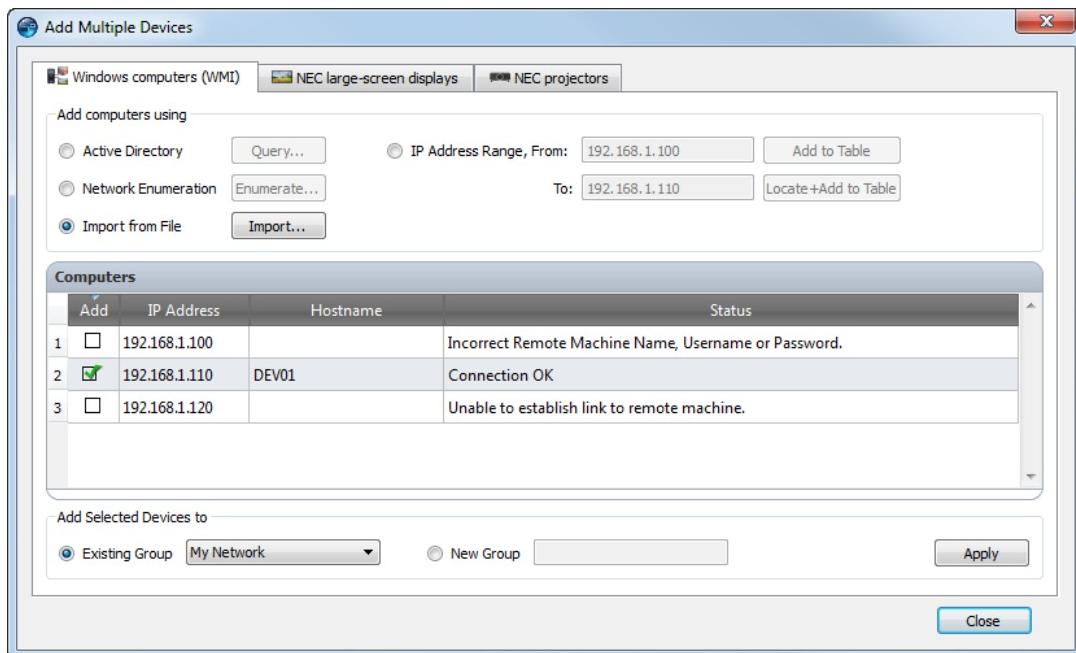
Adding multiple NEC large-screen displays

Multiple NEC large-screen displays can be added in two different ways:

1. Import from File
2. IP address range

✎Note: *The Monitor ID of each display is detected automatically if the display is reachable.*

✎Note: *Large-screen displays that are daisy-chained via RS232 <u>must</u> be added as a single device, and cannot be added using Multiple Devices. The only exception is when using the RS232 WMI Provider which will automatically add all connected displays when the host computer is added.*

With the large-screen displays added to the table, individual displays can be selected or skipped from being added to the device tree by using the ☑ *Add* checkbox on each row of the table.

The displays can be added to either an existing group in the device tree or a new group, created by selecting **New Group** and entering the new group name.

Click **Apply** to add the displays to the *Device Tree*. The displays will be queried in the background to gather information about display settings.

Add NEC large-screen displays using Import from File

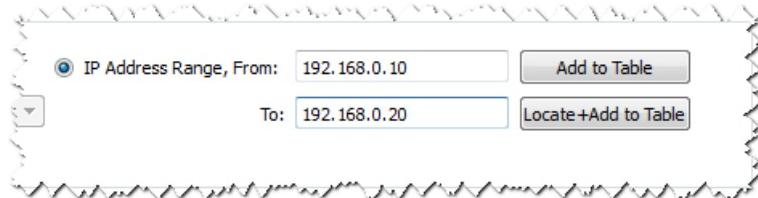A list of IP addresses can be imported from any of the following file types:

- A column of an Excel spreadsheet file
- A delimited text file
- Another NaViSet Administrator 2 database file

Select **Import from File** and click the **Import...** button to open the *Import Devices* dialog.


Import Devices Dialog - NEC large-screen displays

Import File: - Shows the file name selected to import the list from.

Select... - Selects the file to import from.

Select column containing IP addresses or hostnames - Lists the column names from the first row of data. Select the column to use as the IP address.

Devices: - Shows all items, or rows in the currently selected column.

Add to table - Adds the selected items to the table. Connectivity to the displays is <u>not</u> verified. Use this to add displays that may not currently be available on the network.

Locate + Add to table - Adds the selected items to the table. Connectivity to the displays is verified as they are added. This may take several minutes to complete if many displays are being added.

Add NEC large-screen displays using IP Address Range

A range of display IP addresses can be specified and added. Enter the lower IP range in *From*, and the upper range in *To*.
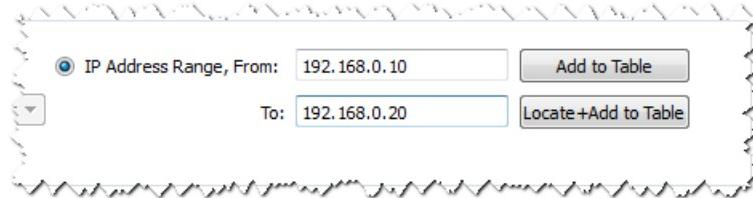
Click **Add to Table** to add all of the IP addresses in the range specified to the table. Connectivity to the displays is <u>not</u> verified. Use this option to add displays that may not currently be available on the network.

Click **Locate+Add to Table** to add all of the IP addresses in the range specified to the table. Connectivity to the displays is verified as they are added to the table. This may take several minutes to complete if many display are added.
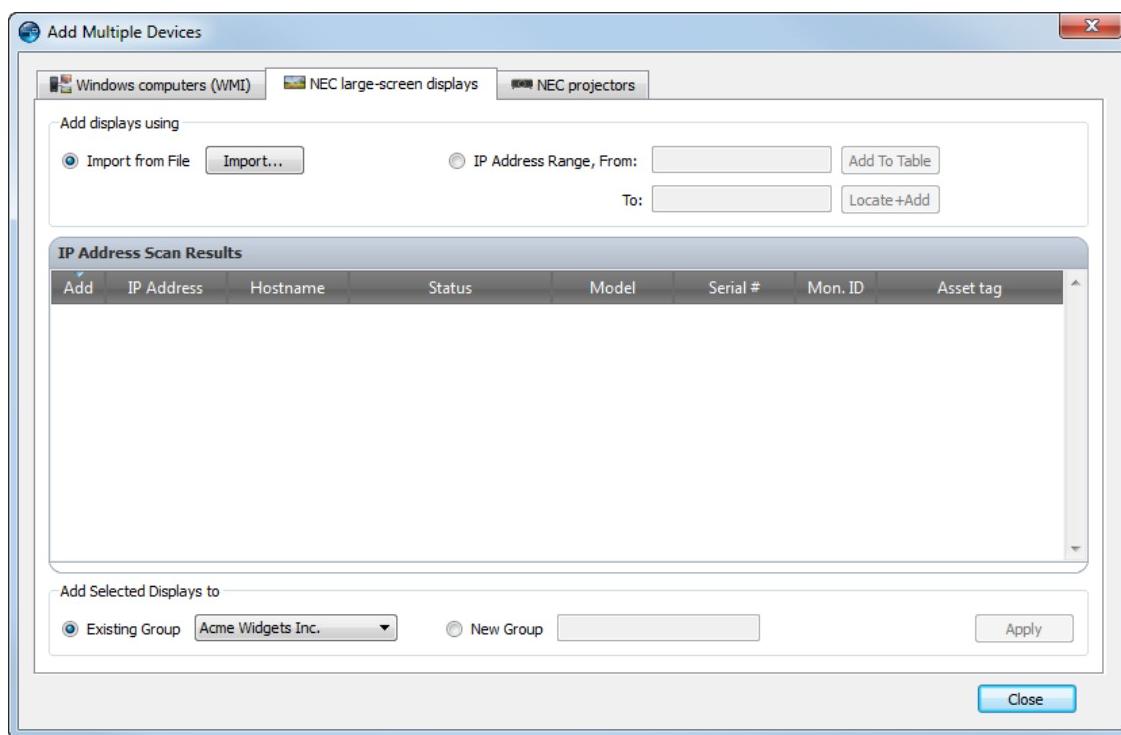
Once the displays are added to the table, individual displays can be selected or skipped from being added to the device tree by using the ☑ *Add* checkbox on each row of the table.

The displays can be added to either an existing group in the device tree or a new group, created by selecting **New Group** and entering the new group name.
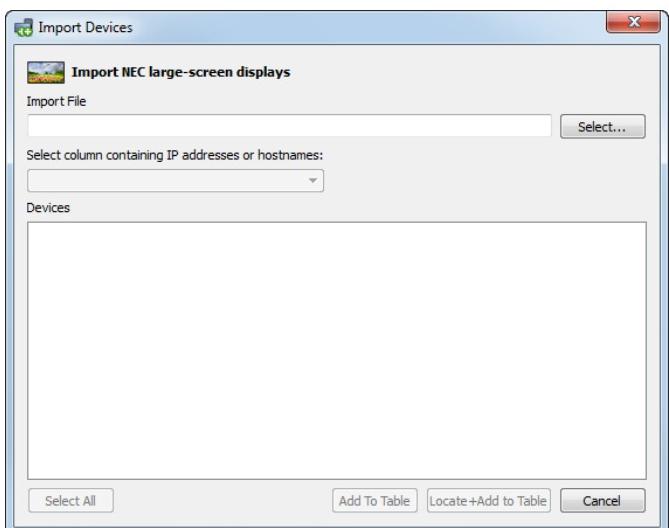
Click **Apply** to add the displays to the *Device Tree*. The displays will be queried in the background to gather information and settings.

Adding multiple NEC projectors

Multiple NEC projectors can be added in the following different ways:

1. Automatic Network Enumeration of projectors on the network

2. Importing a list of IP addresses from a file

3. Specifying an IP address range
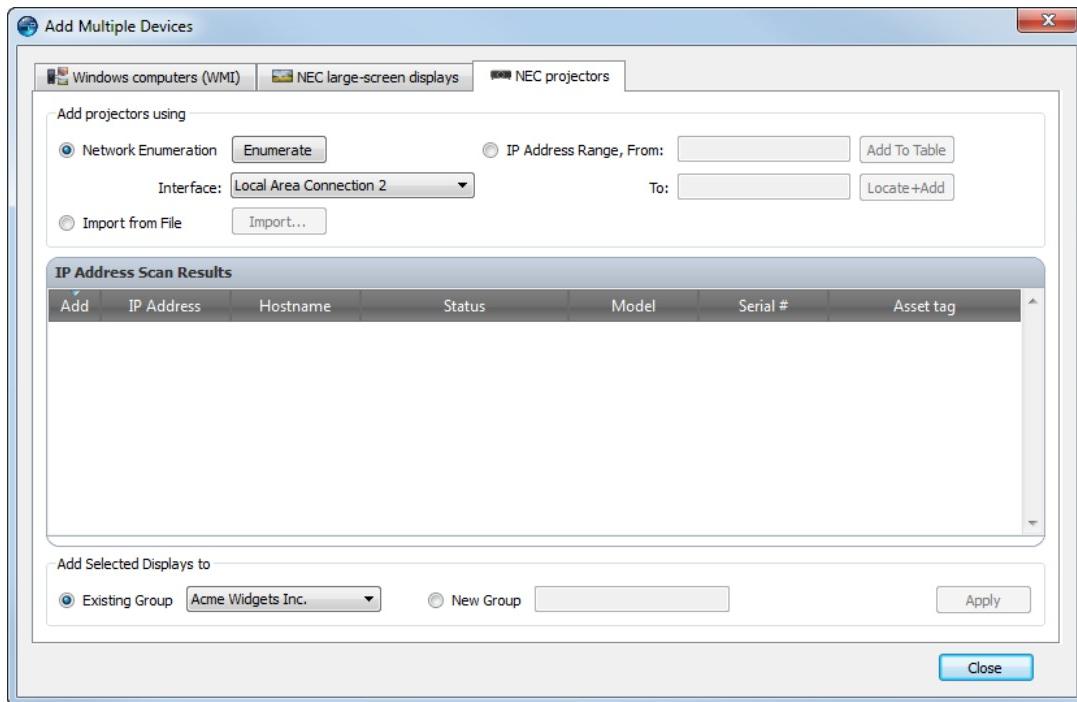
With the projectors added to the table, individual projectors can be selected or skipped from being added to the device tree by using the ☑️*Add* checkbox on each row of the table.

The device tree *Group* in which to add the projectors can be selected from an existing group, or a new group created by selecting *New Group* and entering the new Group name.

Click *Apply* to add the projectors to the *Device Tree*. The projectors will be queried in the background to gather information about the projector controls and settings.

Add NEC projectors using Network Enumeration

Many models of NEC projectors that are connected directly to LAN are capable of being automatically identified. A special identification message will be broadcast and list any projectors that responded. First select the network *Interface* to be used to send the broadcast message on, then click the *Enumerate* button. Any projectors that were identified will be added to the list below.

✎*Note:* *Projectors connected to a computer by RS232 and using the LAN to RS232 Bridge are not be able to be detected using the Network Enumeration function. Not all projector models support the automatic network enumeration feature.*

Add NEC projectors using Import from File

A list of IP addresses can be imported from any of the following file types:

- A column of an Excel spreadsheet file
- A delimited text file
- Another NaViSet Administrator 2 database file

Select **Import from File** and click the **Import...** button to open the *Import Devices* dialog.

Import Devices Dialog - NEC projectors

Import File: - Shows the file name selected to import the list from.

Select... - Selects the file to import from.

Select column containing IP addresses or hostnames - Lists the column names from the first row of data. Select the column to use as the IP address.

Devices: - Shows all items, or rows in the currently selected column.

Add to table - Adds the selected items to the table. Connectivity to the displays is not verified. Use this to add displays that may not currently be available on the network.

Locate + Add to table - Adds the selected items to the table. Connectivity to the displays is verified as they are added. This may take several minutes to complete if many displays are being added.

Add NEC projectors using IP Address Range

A range of display IP addresses can be specified and added. Enter the lower IP range in **From**, and the upper range in **To**.
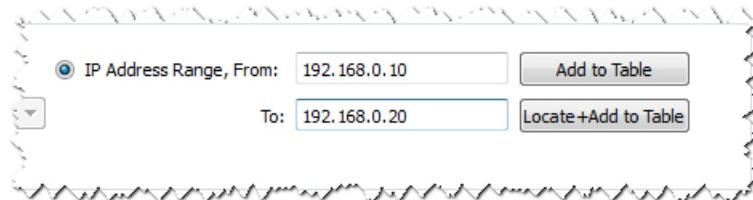
Click **Add to Table** to add all of the IP addresses in the range specified to the table. Connectivity to the projectors is not verified. Use this option to add projectors that may not currently be available on the network.

Click **Locate+Add to Table** to add all of the IP addresses in the range specified to the table. Connectivity to the projectors is verified as they are added to the table.
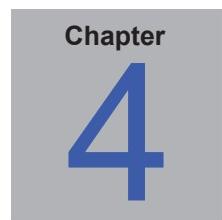
Chapter

4 Configuring Devices

This chapter covers how to configure all of the different supported devices so that NaViSet Administrator can successfully connect to, query, and control them.

Windows Computer on LAN connections via WMI

When connecting to remote Windows computers via WMI, the following important points must be verified to ensure a successful connection:

1. The Windows user account used to access the remote computer must have sufficient access privileges to WMI (specifically the `ROOT\CIMV2` namespace). Typically Administrator accounts have sufficient access privileges by default.

2. The password for the account used to access the remote computer must not be a blank password.

3. The Windows Firewall must allow remote access to WMI. The default Windows Firewall settings typically block access to WMI, thus preventing remote access to a computer.

Note: *The Windows Firewall settings are configured automatically when installing either the DDC/CI or RS232 WMI Provider on computers running an English version of Windows.* **Other language versions of Windows might not be configured automatically due to the different localized naming of WMI, and may need to be manually configured.**

The Windows Firewall settings for WMI can also be manually changed from the Windows Control Panel as shown below, in order to allow remote access:
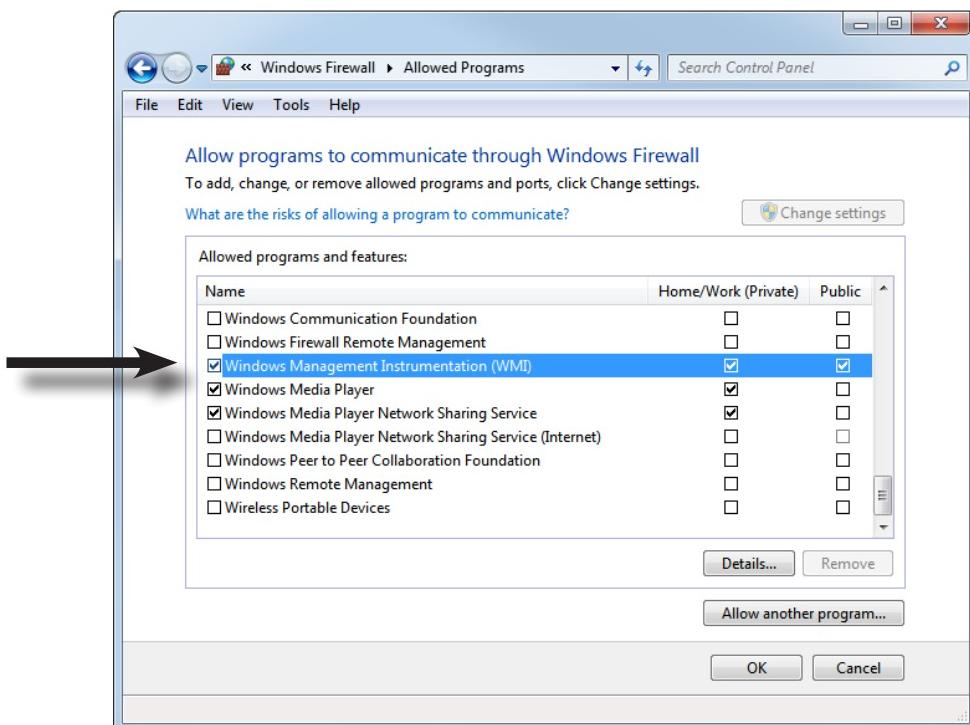
4. If the Windows computers on the network are part of a Windows *Workgroup* and <u>not</u> a *Domain*, the default UAC (User Account Control) security settings will <u>not</u> allow access to WMI, even if the Firewall is disabled. Installing the *DDC/CI* or *RS232 WMI Providers* on the computer will automatically configure the security settings to allow access.

Device Configuration

The following pages show all of the different devices and configurations that can be used with NaViSet Administrator. For each type the device configuration, connections, settings, and important points to note are shown.

Desktop display(s) connected to Windows Computer

Configuration Overview

One or more desktop monitors connected to a Windows computer. The **DDC/CI WMI Provider** can be optionally installed on the computer to provide advanced information for all displays and is required for two way control of NEC displays.

Configuration Features

1. Basic information about the main display such as Model Name and Serial Number without requiring the DDC/CI WMI Provider to be installed.

2. Communications with the display(s) via the video graphics card and standard video cables, so no additional cabling is required.

3. Supports WMI Scripting when using **DDC/CI WMI Provider**. See Appendix G on page 111.

Connection Overview

Select device type **Windows computer on LAN (WMI)**

VGA/DisplayPort/DVI Connections

VGA   Display Port   DVI

Note: Optional connections and devices shown in gray.
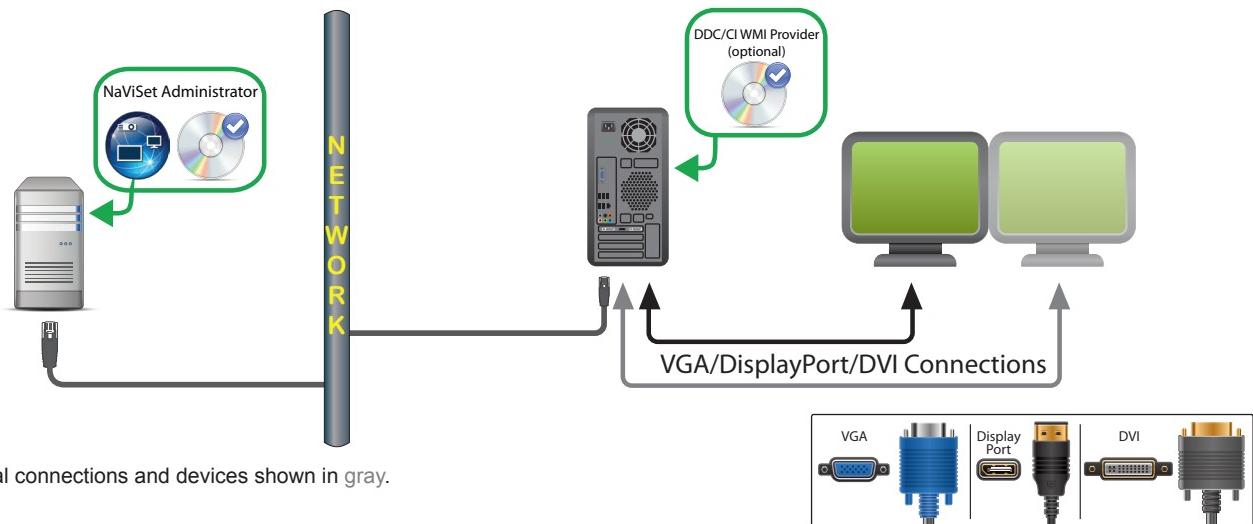
Restrictions

1. KVM (Keyboard / Video / Mouse) switches, splitters, and long video cables (>3m) are not supported.

2. Support in the video graphics card driver is required for two way communications. Always update to the latest video drivers available from the video graphics card vendor. Video drivers included by default in Windows might not provide communications support.

3. DDC/CI WMI provider required for detailed information and information from additional displays other than the primary display.

Notes

1. Basic display information available for both NEC and third party desktop displays is available.

2. Most newer graphics cards supported. See **DDC/CI WMI Provider README** for latest support information.

3. Support for Windows computer Shutdown, Restart, Wake-on-LAN, and monitoring of computer parameters is provided automatically.

4. Control of NEC large-screen displays is supported by DDC/CI but with some limitations. See Appendix A on page 99 for details.

5. The *DDC/CI WMI Provider* cannot be installed at the same time as the *RS232 WMI Provider*.

NEC large-screen display(s) with direct LAN connection

Configuration Overview

Large-screen display connected to directly LAN and using one IP address.

Configuration Features

1. Additional displays can be daisy chained from the LAN-connected display via RS232.

2. Operates without a computer.

Connection Overview

Select device type ***NEC large-screen display connected to LAN***

Note: Video connections not shown for clarity.
Optional connections and devices shown in gray.
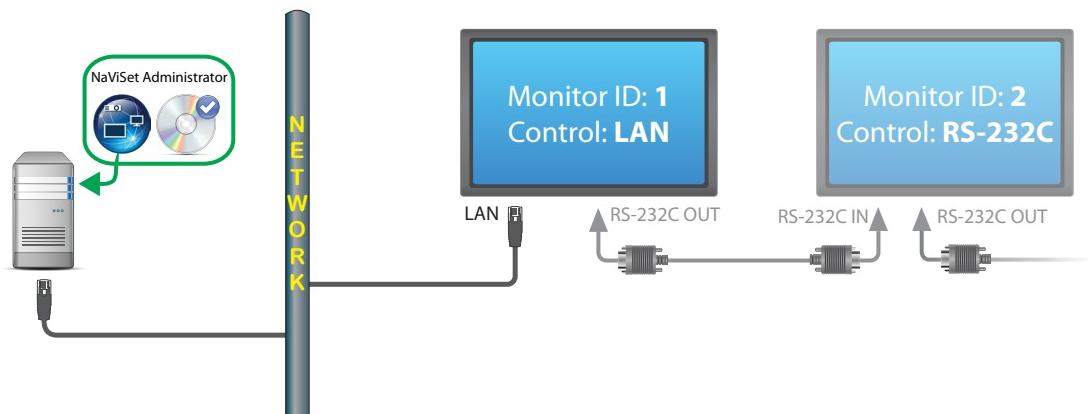
Restrictions

1. Each display on the daisy-chain must have a unique Monitor ID.

2. Monitor IDs for Daisy-chained displays do not have to start at 1, but must be consecutive.

3. The first display must be configured to use LAN. Others must be configured to use RS-232C control.

4. RS-232C cables must be crossover / NULL modem type.

Notes

1. RS232 splitters or Y connections are not permitted on any connection.

2. If displays are daisy-chained, they must be added to the device tree using ***Add Single Device...*** and selecting ***This is the first display in a daisy chain***.

NEC large-screen display(s) using LAN to RS232 Bridge

Configuration Overview

Windows computer with one COM port using **LAN to RS232 Bridge** utility, and connected to a large-screen display via RS232.

Configuration Features

1. Uses one COM port on the host computer.
2. Additional displays can be daisy chained via RS232.
3. Fast command operation.

Connection Overview

Select device type **NEC large-screen display connected to LAN**

Note: Video connections not shown for clarity.
Optional connections and devices shown in gray.
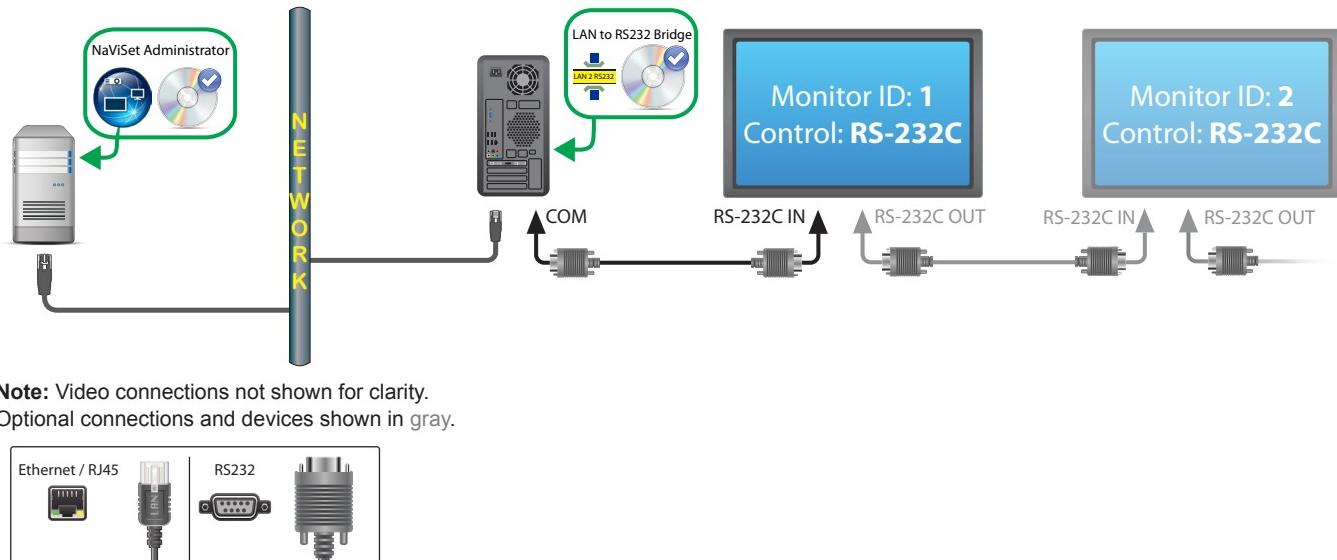
Restrictions

1. Monitor IDs for Daisy-chained displays do not have to start at 1, but must be consecutive.
2. Displays must be configured to use RS-232C control.
3. Configure COM port in the **LAN to RS232 Bridge** utility. Select 9600 Baud Rate.
4. RS-232C cables must be crossover / NULL modem type.
5. If displays are daisy-chained, they must be added to the device tree using **Add Single Device...** and selecting **This is the first display in a daisy chain**.

Notes

1. The Windows computer must be running and the user logged-in in order to communicate with displays.
2. The computer can be added separately as **Windows computer on LAN (WMI)** to provide shutdown, restart, Wake-on-LAN and monitoring of computer parameters.

NEC large-screen display(s) using RS232 WMI Provider

Configuration Overview

Windows computer with one or more COM ports using RS232 WMI Provider. Connected to one or more NEC large-screen displays via RS232.

Configuration Features

1. Supports multiple COM ports on the host computer.
2. Displays can be daisy chained via RS232.
3. Supports WMI scripting.

Connection Overview

Select device type *Windows Computer on LAN (WMI)*

Note: Video connections not shown for clarity.
Optional connections and devices shown in gray.
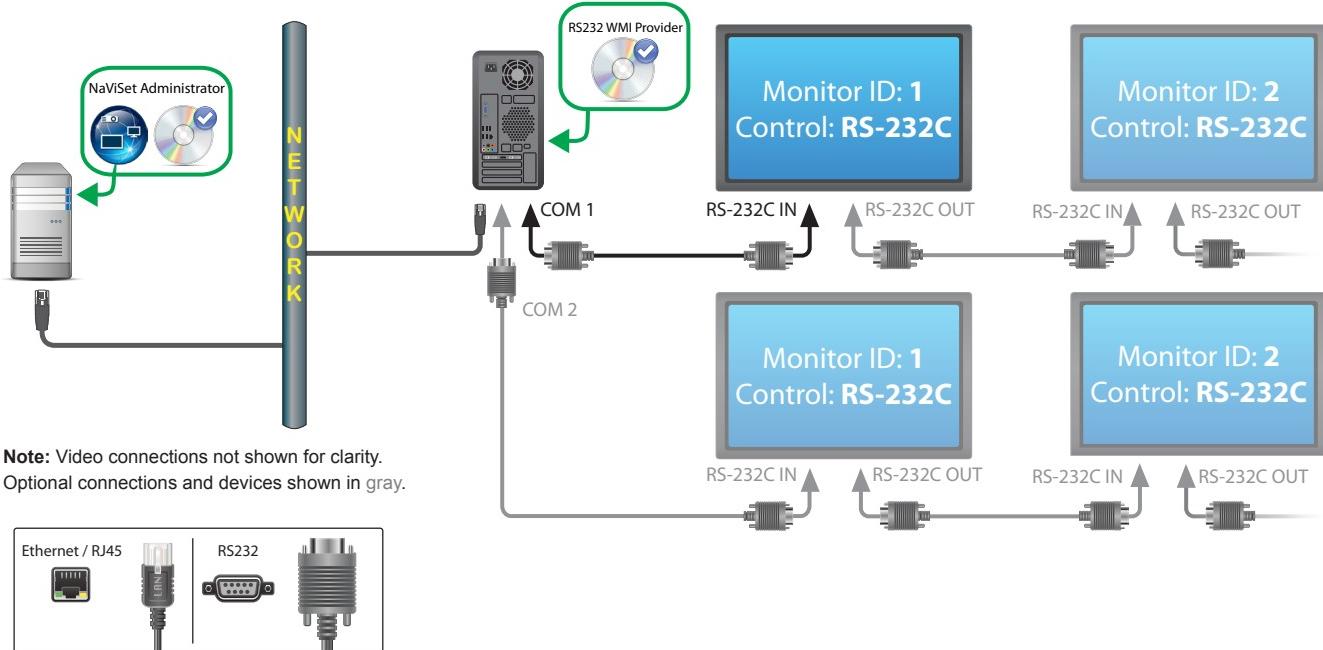
Restrictions

1. Each display on each daisy chain must have a unique Monitor ID.
2. Configure COM ports and Monitor IDs in the ***RS232 WMI Provider configuration utility***. See Appendix E on page 107.
3. RS-232C cables must be crossover / NULL modem type.

Notes

1. Monitor IDs do not have to start at 1.
2. Security is provided by WMI access restrictions.
3. The Windows computer must be running in order to communicate with displays.
4. For fastest performance use the ***LAN to RS232 Bridge*** or direct LAN connection.
5. See Appendix A on page 99 for comparisons between the *LAN to RS232 Bridge* and *RS232 WMI Provider*.
6. The *RS232 Provider* cannot be installed at the same time as the *DDC/CI WMI Provider*.

NEC large-screen display(s) with SBC and dual LAN connections

Configuration Overview

Large-screen display with SBC (Single Board Computer) connected to the LAN. The large-screen display is also connected to the LAN directly.

Configuration Features

1. Displays can be controlled even if the SBC is shut down or non-functional.

2. Displays can be daisy chained.

3. The SBC can run operating systems other than Windows.

Connection Overview
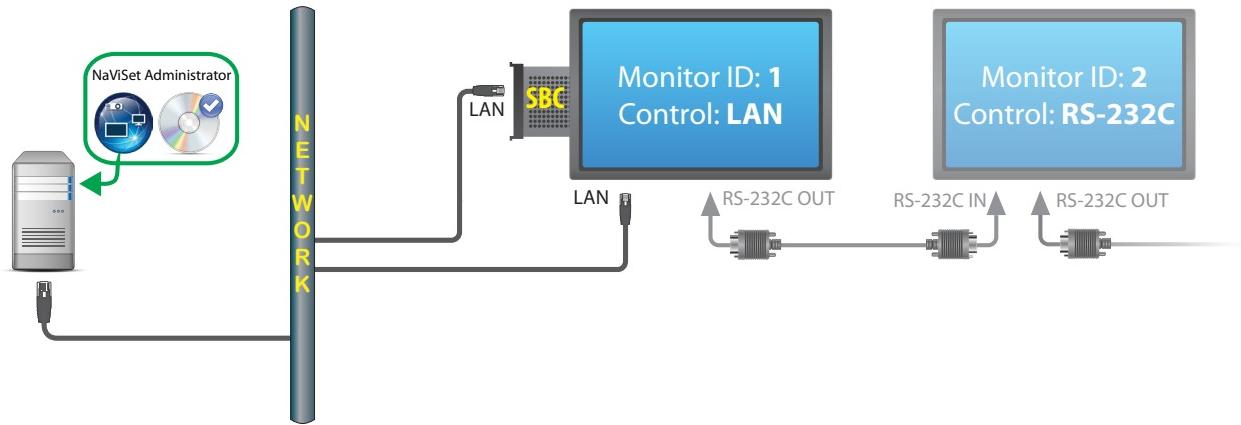
Select device type *NEC large-screen display connected to LAN*

Note: Video connections not shown for clarity.
Optional connections and devices shown in gray.

Restrictions

1. Each display on the daisy chain must have a unique Monitor ID, and Monitor IDs must be consecutive.

2. The first display must be configured to use LAN. Others must be configured to use RS-232C control.

3. RS-232C cables must be crossover / NULL modem type.

4. If displays are daisy-chained, they must be added to the device tree using *Add Single Device...* and selecting *This is the first display in a daisy chain*.

Notes

1. Monitor IDs do not have to start at 1.

2. Two IP addresses are required (one for the SBC, and one for the display).

3. The SBC can be added separately to the device tree as *Windows computer on LAN (WMI)* to provide shutdown, restart, Wake-on-LAN, and monitoring of computer parameters.

NEC large-screen display with SBC and single LAN connection

Configuration Overview

Large-screen display with SBC (Single Board Computer) connected to LAN, also using the internal RS-232C connection to the SBC for communications.

Configuration Features

1. Single LAN connection using one IP address.
2. Can use either *LAN to RS232 Bridge* or *RS232 WMI Provider*.

Connection Overview

Select device type

>*NEC large-screen display connected to LAN* (if using LAN to RS232 Bridge)

or

>*Windows Computer on LAN (WMI)* (if using RS232 WMI Provider)
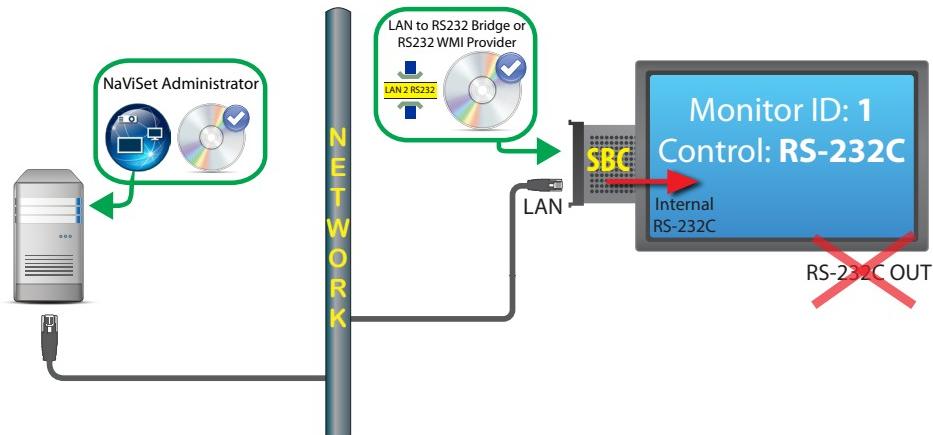
Note: Video connections not shown for clarity.

Restrictions

1. The *LAN to RS232 Bridge* or *RS232 WMI Provider* must be used.
2. Additional displays <u>can not</u> be daisy-chained from the RS232 OUT when using the SBC's internal RS-232C connection.
3. The display must be configured to use RS-232C control.
4. Do not use the *DDC/CI WMI Provider* with an SBC. The internal connection to the display supports RS232 communications only.

Notes

1. Monitor ID does not have to be 1.
2. One IP address is required.
3. The SBC must be running Windows and be operational in order to communicate with display(s).
4. See Appendix A on page 99 for comparisons between the *LAN to RS232 Bridge* and *RS232 WMI Provider*.

NEC projector with direct LAN or wireless connection

Configuration Overview

NEC projector connected to directly LAN or wireless network.

Configuration Features

1. Single LAN connection using one IP address.

2. Operates without a computer.

Connection Overview

Select device type *NEC projector connected to LAN*
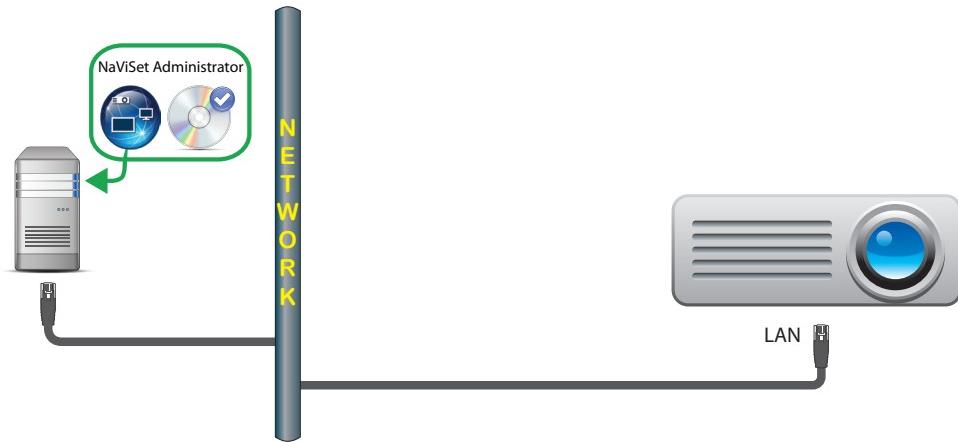
Note: Video connections not shown for clarity

Notes

1. Some projector models require the communications setting to be manually configured between RS232 and LAN via the On Screen Display. Select *LAN* for this configuration.

NEC projector connected via Windows Computer to LAN

Configuration Overview

NEC projector connected to a Windows computer via RS-232C, and the computer is running the *LAN to RS232 Bridge* utility.

Configuration Features

1. Shared LAN connection using one IP address.

2. Supports projector models without LAN interface.

Connection Overview

Select device type *NEC projector connected to LAN*

Note: Video connections not shown for clarity
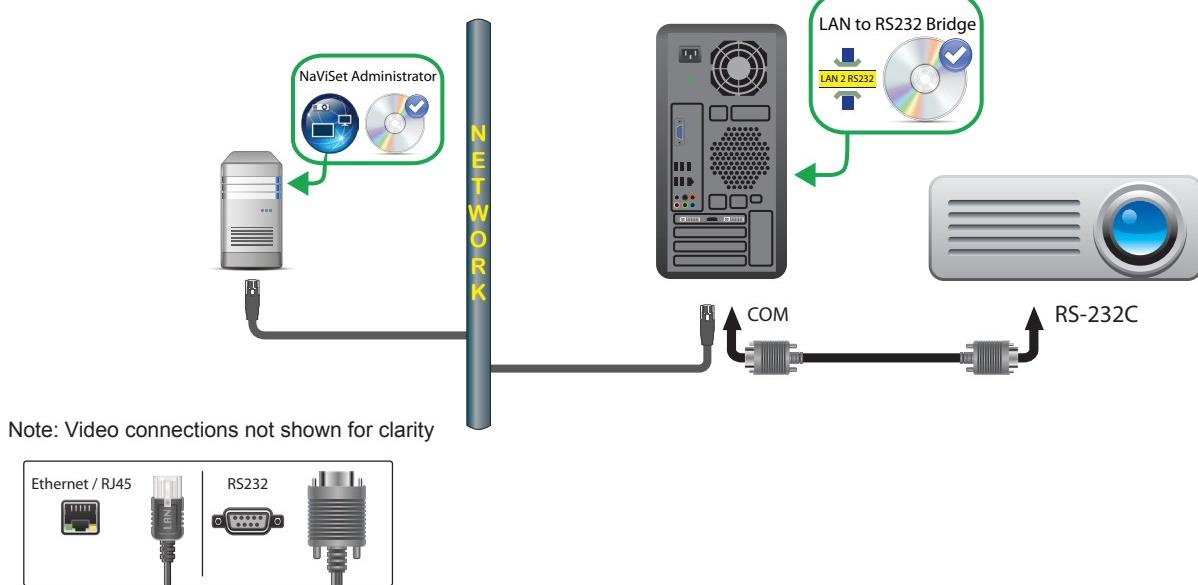
Restrictions

1. Configure the Baud rate in the *LAN to RS232 Bridge* utility to match that of the projector. Available rates are 9600, 19200, and 38400 baud.

2. Some projector models require the communications setting to be manually configured between RS232 and LAN via the On Screen Display. Select *RS232* for this configuration.

3. Configure the RS232 COM Port in the *LAN to RS232 Bridge* utility to the COM port used on the computer.

4. Computers running the *LAN to RS232 Bridge* utility are not able to provide network enumeration of the connected projector. The projector can <u>not</u> be automatically identified on the network using the projector *Enumerate* function in NaViSet Administrator. The IP address or hostname of each computer must therefore be manually entered instead.

5. RS-232C cable must be crossover / NULL modem type.

Notes

1. The Windows computer can be added separately as *Windows computer on LAN (WMI)* to provide shutdown, restart, Wake-on-LAN and monitoring of computer parameters.

2. The computer must be running and user logged-in in order to communicate with the projector.

Chapter

5 Controlling Devices

Devices can be controlled either interactively on an individual basis using the controls in the *Device Properties* Windows, or in groups as part of a *Task* operation (see "Tasks" on page 58).

To control a device interactively, double-click the device icon in the device tree to open the Device Properties Window, which will contain one or more tabs with information and controls relating to the device.

Read-only displays

Read-only displays, where two-way communications with the display is not available or supported, only have an *Info* tab, and no interactive controls are available. The information shown from the display is read-only and static, such as serial number, model name, and date of manufacture.

A display may be read-only for one or more of the following reasons:

- The *DDC/CI WMI Provider* has not been installed on the remote Windows computer.

- The *DDC/CI WMI Provider* has been installed on the remote Windows computer; however the video graphics chipset may not support DCC/CI communications with the display.

- The input being used on the display may not support DDC/CI. For example HDMI inputs do not support DDC/CI.

- The display is not a supported model or is not an NEC model.

Interactive Control

For devices that are not read-only, several tabs grouped into different types of controls will be shown. Controls can be adjusted in real-time and the remote device will be updated automatically.

The available controls will depend on the type of device and the connection to the device. NaViSet Administrator will automatically query the device to determine the capabilities and controls available.

Note: Changes to the settings and controls on a display cannot be made when the device is in the Power Off state. It must first be powered on before making any setting or control adjustments.

As different tabs are selected, the remote device will be queried to read the latest settings for the controls displayed on the tab. This can take a few seconds to complete. The settings can also be read from the display and updated by clicking the **Refresh** button on a tab.

The following table shows the different types of tabs that can be shown depending on the capabilities of the device selected.

Tab	Description
Info	A summary of the most common device properties. If a *Full Update* has been performed on the device, all of the supported control settings from the device will be shown.
Network	Network settings used to connect to the device such as IP address and credentials.
Power	Power On and Off, and other power related controls. Windows computers include controls for Shutdown, Restart, and System Wake-on-LAN
Video	Controls for adjusting the video settings such as video input, brightness, color, etc.
Geometry	Controls for adjusting the positioning and scaling of the video signal on the screen.
Audio	Audio related controls such as volume.
Display Schedule	Controls for configuring the internal scheduling function (schedules that run autonomously within the display) in supported large-screen displays.
OSD	Controls for configuring settings relating to the On Screen Display
IR Remote	Used to send commands equivalent to pressing the buttons on the device's IR Remote controller. Available on large-screen displays and projectors.
ECO	Controls relating to ECO and power saving.
Custom	Shows a list of all controls available on the device that can be selected and adjusted. This includes more infrequently used controls not shown on other tabs.

Info Property Tab

The *Info* device property tab shows a summary of the essential information about a device, such as the model name, serial number, IP and MAC addresses, and many others depending on the device type.

When a device is first added to the *Device Tree*, the basic information about the device is read and stored in the database.

Information about a device can be updated at any time using either the **Standard Update** or **Full Update** functions (see "Standard Update vs. Full Update" on page 55 for more details) which are available both on the *Info* device property tab, and from the device tree's context menu, shown by right-clicking on the device.

The date and time the information was last updated is shown in **Last Update:**. This text will be shown in red if the device had not been updated within the last 24 hours.

The information shown on the *Info* tab can be exported to the clipboard, an Excel spreadsheet, or a delimited text file by clicking the **Export...** button. Also information from individual tables can be copied to the clipboard by first selecting the desired rows in the table, then selecting **Copy** from the **Edit** menu, or by pressing **Ctrl+C**.

Windows Computer Info

The *Info* property tab for remote Windows computer devices show information about the computer such as the operating

system, service pack, CPU type, total and available RAM, and if supported by the hardware, the make, model, and serial number of the computer.

The OS version, service pack and architecture are also shown, along with the CPU type, speed, and current usage percentage. The installed physical memory size and currently available memory is shown.

If *Open Hardware Monitor* (see Appendix C on page 102) is installed on the remote computer, the CPU, GPU, and Main Board temperatures and fan speeds will be reported if supported.

Projector or Large-screen Display Info

The *Info* tab includes information such as the model name, serial number, IP and MAC address of the display.

If the display supports Diagnostics reporting, or includes internal temperature sensors, these readings will be shown.

The Power On Time counter value will be shown in both hours and days if supported by the display.

Projectors that support reading the number of hours used and hours remaining on lamps and filters will show this information also.

Desktop Display Info

For a desktop display device, the *Info* tab includes information about the related video graphics system on the computer for the display, such as the display adapter model, driver version, and current video resolution settings.

If the display supports Diagnostics reporting, or includes internal temperature sensors, these readings will be shown.

The Power On Time counter, value will be shown in both hours and days if supported by the display.

⊕ Display Schedule Property Tab

This tab is shown when controlling an NEC large-screen display that supports internal schedules (schedules that run autonomously within the display).

The schedule settings can be set for each of the 7 supported internal schedules to power the display on and off, as well as selecting different video inputs at specific times on specific days. Once configured in the display, it will perform the programmed schedule using the internal clock and a connection to NaViSet Administrator will not be needed.
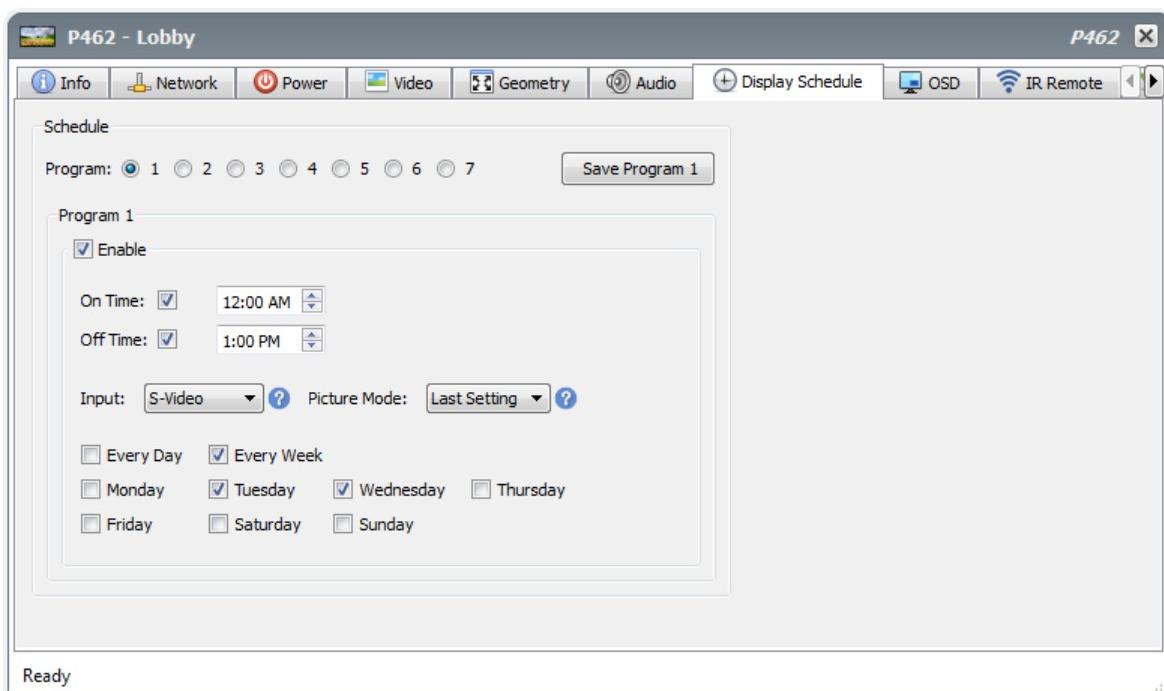
⭐ Custom Property Tab

The *Custom* device property tab lists all of the controls available on the device that can be adjusted. The list includes more infrequently used controls not shown on other tabs.

To adjust a control, select it from the ***Controls*** list and it will be added to the ***Settings*** list shown on the right side. The remote device will be queried in real-time to read the current setting for the selected control. If an adjustment or change is made to a control the new setting will be sent to the remote device and confirmed. This process can take a few seconds to complete.

Multiple controls can be added to the *Settings* list and the order of the list can be changed using the ⬆ and ⬇ buttons. Settings can be removed from the list by clicking the ❌ button.

The *Settings* list for a device can be saved by clicking the ***Save List*** button, and the controls shown in the list will be restored the next time the device's Properties Window is opened.
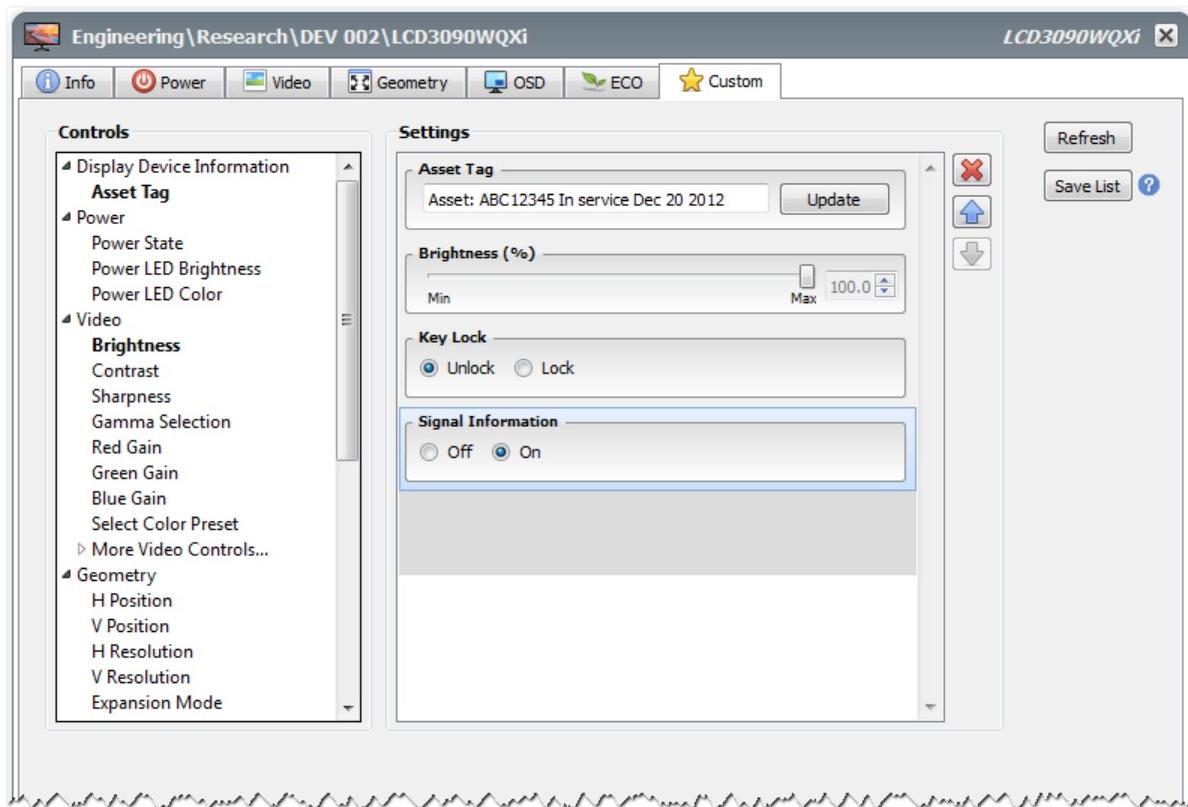
Some of the more unique controls available on the Custom Controls list are shown below.

Asset Tag

A custom text string can be entered and stored in the display. This text string could for example be a conventional asset tracking code, company name, department name, phone number etc. This can then be read by NaViSet Administrator and used for asset tracking over a network. For desktop displays and large-screen displays, this text can normally only be altered or erased by using NaViSet Administrator. On projectors the Asset Tag is known as the Projector Name.

Only ASCII based characters can be entered and the length is limited by the capabilities of the device.

Sync Clock with System Date/Time

For large-screen displays that have an internal clock for performing schedule functions automatically, the clock can be synchronized with the time and date from the local computer. If the display is located in another time zone, the time applied to the display can include an offset value of from -23 to +23 hours relative to the local time. For example to correctly set the clock for a display physically located in a time zone 2 hours ahead of the local time, select an offset of +2 hours, and click Update.

TV Channel

For large-screen displays that have an internal TV tuner, the TV channel can be set using the TV Channel Control. Enter the channel and sub-channel numbers and click **Update** to change. The TV tuner must be selected as the current video input.

Standard Update vs. Full Update

Standard Update will read and update the basic information about a device.

For display devices, this includes items such as:

- Model Name
- Serial Number
- Date of Manufacture
- Diagnostics
- Asset Tag

For desktop displays connected to a Windows computer and accessed via WMI, additional information about the computer and video graphics system, such as the display adapter manufacturer, model, driver version and many more items will be shown.

Full Update will perform a Standard Update plus read and update information about all of the supported controls and their current setting values. All of the settings read will be listed in the tables on the *Info* tab. Because of the large number of controls supported on many devices, the *Full Update* can take over a minute depending on the device and connection type.

✎*Note:*

1. Performing a *Standard* or *Full Update* will overwrite all of the device information saved in the database from the last *Standard* or *Full Update*.

2. Information for devices that are currently powered off can not be fully updated until they are fully powered on and available for remote access.

3. When a *Standard* or *Full Update* is performed directly on a Windows computer, any new display devices will be automatically detected and added to the device tree. If an existing device has been disconnected or can no longer be accessed, an option to delete the device will be given.

Chapter

6 Credential Library

About the Credential Library

Access credentials must be specified when connecting to remote Windows computers via WMI. These credentials must be for a user with sufficient access permissions for administering the computer and accessing WMI. The credentials consist of a Username and Password.

Note: *If the user is a member of a different domain than that of the computer, then the username can be specified in the* *format* `domain\username`*.*

NaViSet Administrator has a *Credential Library* feature for managing credentials and making it easier to store and apply credentials for accessing multiple computers. This saves having to enter the same credentials again each time a new computer is added, or needing to individually update each computer's credentials if the administrator's password or username is changed. The passwords entered are encrypted and stored in the current database file.

Using the Credential Library

The *Credential Library* can be accessed from:

1. The *Devices* menu.
2. The *Credential Library* button on the toolbar.
3. The *Network* tab of a Windows computer device.
4. When using *Add Single Device* with a *Windows Computer on LAN (WMI)* device type.
5. When adding multiple *Windows Computers (WMI)* in *Add Multiple Devices*.

Note: *Credentials are not used for local connections (connections to the same computer that is running the NaViSet Administrator application). Credentials can be entered for a local connection, however since they aren't used, local connections should* not *be used to verify administrator credentials.*
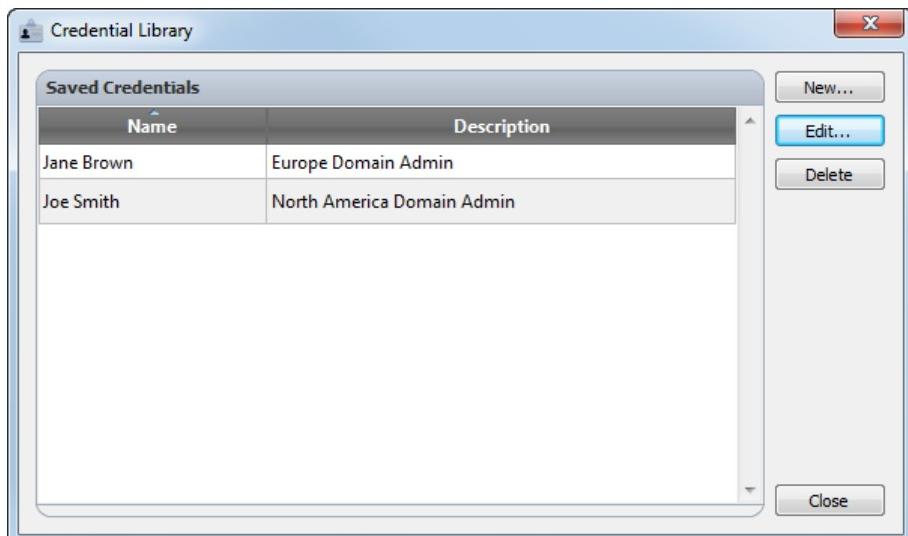
Adding a new credential

Click the **New..** button in the *Credential Library* to open the **User Credential Dialog**. The **User name** (with optional domain specifier), **Password**, and name alias and **Description** shown in the Credential Library lists can be entered.
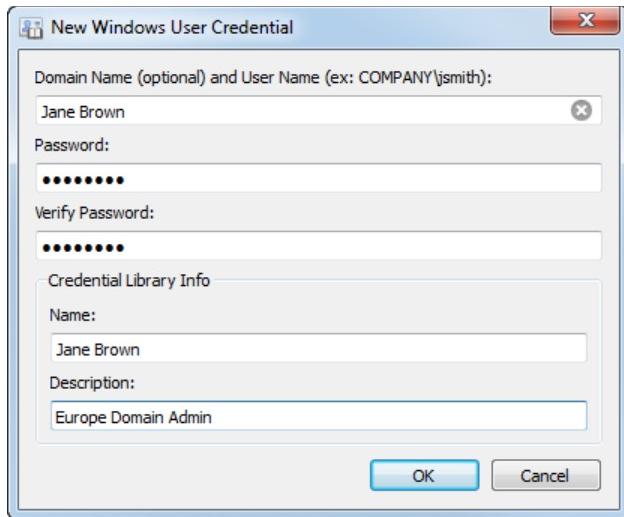
Editing an existing credential

Click the **Edit..** button in the *Credential Library* to open the **User Credential Dialog**. Changes to credentials will automatically be applied to all device connections using the credential.

Deleting an existing credential

Click the **Delete** button in the *Credential Library to delete a credential from the library.*

Chapter

7 Tasks

About Tasks

Tasks are operations that query or perform commands on one or more devices. Tasks can be scheduled to start at particular times or on demand. Tasks can be configured to run once or continue running for a specific period of time and at specified intervals.

There are 3 basic types of task that can be performed in NaViSet Administrator:

- **Command Tasks:** Change settings or perform operations on devices. For example: Turning the display power on, selecting a particular video input, or selecting a particular channel on the TV tuner. Command Tasks can also be used to create a preset configuration of multiple settings that can be then sent to displays to perform easy configuration.

- **Conditional Tasks:** Read one or more settings or parameters from devices at periodic intervals, and issue alerts if any of the values are outside of a specified range or value, or changes in value. For example an alert can be issued if the internal temperature of a display exceeds a specific value, or if a diagnostic error condition reported by a display.

- **Informational Tasks:** Read one or more settings or parameters from devices at periodic intervals, and displays the readings in real time. An example use would be to continuously monitor the internal temperature of a display.

When a Task is run it will attempt to perform the specified operation on each of the devices selected in the Task before completing. For Conditional and Informational type tasks, the task can be set to poll the devices at specific intervals, either indefinitely, or for a specific run time.

The status of running tasks can be monitored in real-time. Upon completion, the result history of every operation is saved in the database for use at a later time. Task history can also be exported via the clipboard, an Excel spreadsheet, or delimited text file.

Task Library

All tasks are managed using the *Task Library*, available on the *Tasks* menu or by clicking the toolbar button. Tasks can be created, edited, duplicated, and deleted from within the *Task Library*. The execution history of a task can also be viewed and exported.
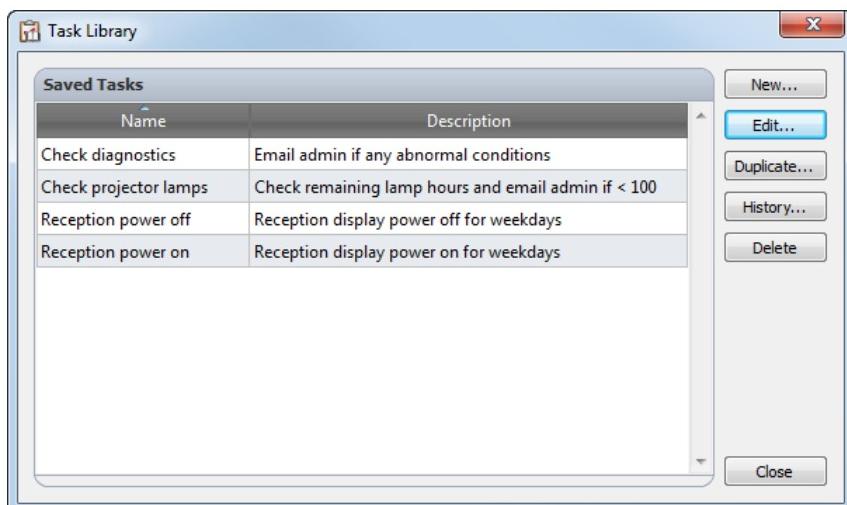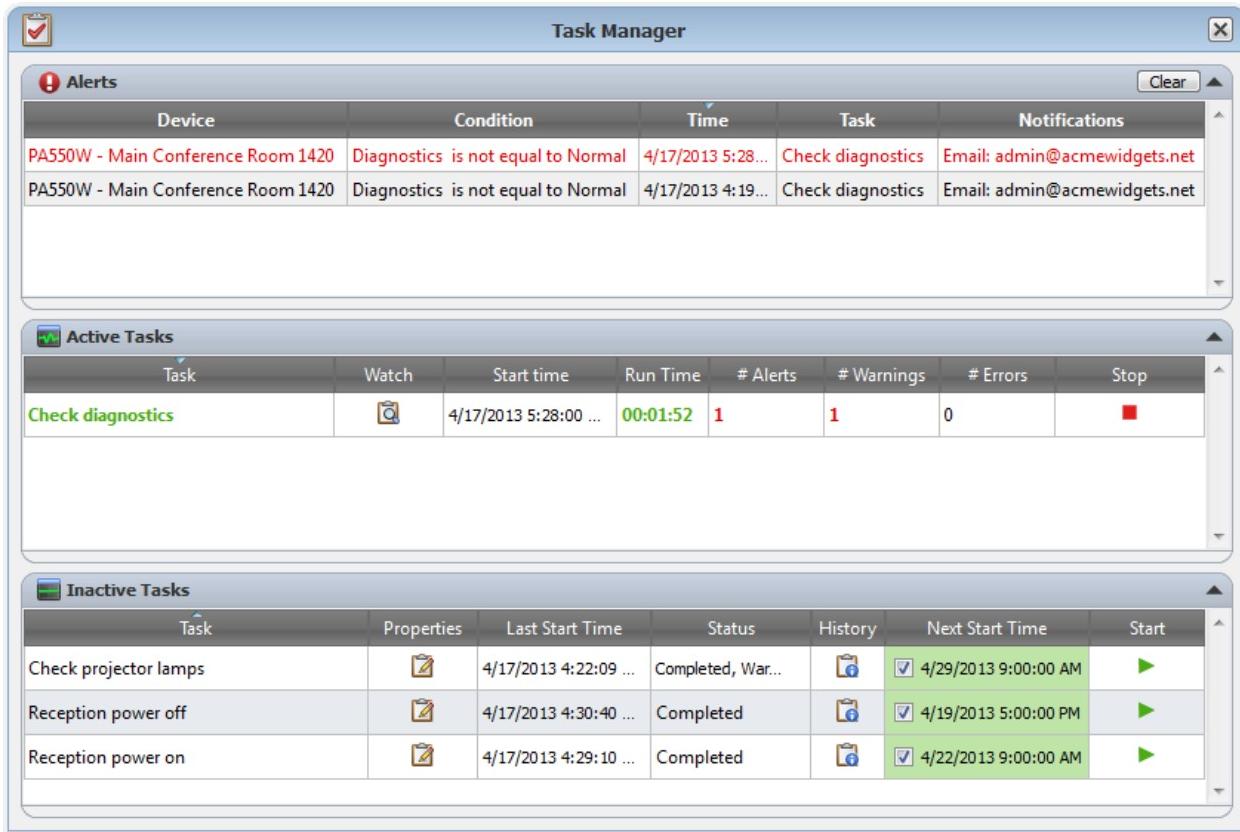
☑ Task Manager

All Tasks in the current database are listed in the *Task Manager* window.

This window shows:

- Tasks that are currently inactive (not currently being processed/executed)
- Tasks that are currently active (being processed/executed)
- Any alert conditions that have occurred while running any tasks

▦ Inactive Tasks list

Inactive Tasks are tasks that are either scheduled to run and are waiting for their start time to occur, or tasks waiting to be started manually. For Tasks that are scheduled to run, the *Next Start Time* is shown with a green background. The checkbox in the *Next Start Time* column can be used to temporarily disable the automatic starting of a task with the schedule. Any task can be made to start immediately by clicking the ▶ *Start* button.

The properties of a Task can be edited by clicking on the 📝 *Properties* button. This is the same as editing a task from the *Task Library*.

The history of a task can be viewed by clicking the task 🔖 *History* button in an inactive task. This is the same as viewing the history from the *Task Library*. The task history lists the results from each time the tasks was executed.

⌁ Active Task list

The *Active Task* list shows Tasks that are currently being processed. Tasks that are configured with a schedule to start automatically, will move from the *Inactive Task* list to the *Active Task* list while they are being processed. Once the task has been completed, or is manually stopped, it will return to the *Inactive Task* list again until the next scheduled start time is reached, or it manually started.

While a task is active, the progress of the task can be viewed in real-time by clicking the 🔍 *Watch* button. An active task can also be manually stopped by clicking the ■ *Stop* button.

The number of alerts, warnings or errors that occur while a task is running are shown.

❶ Alerts list

Alerts occur when a condition in a *conditional* type task becomes true. Alerts issued by a task are listed in the *Alert* list. The *Alerts* list shows the task and condition that caused the Alert, the device it occurred on, the time it occurred, and any notifications that were sent.

- The Alert list contents can be permanently cleared by clicking the *Clear* button.

- Alerts messages generated during the current application session are shown with red text, and alerts created in previous sessions are shown with normal text.

- More detailed information about a device in the list can be seen by mousing over the device column.

- Clicking on a row in the *Alerts* list will automatically select the corresponding device in the *Device Tree*.

- Double-clicking a row will open and select the device tab.

When an alert is issued, the Alert notification button is shown at the bottom right side of the main application window. Clicking this button will open the *Alerts* list and bring the tab the top:

If enabled in the application *Preferences (see page 79)*, an Alert will also be shown in a popup message in the Windows Task Tray:
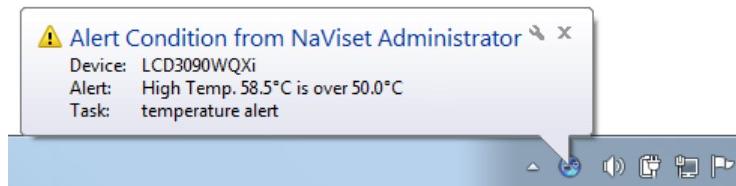
Creating Tasks

Tasks can be created using a step-by-step wizard interface in the *Task Builder Wizard,* available on the *Tasks* menu, or by clicking the ☑ *Task Builder Wizard* button. The wizard offers a guided explanation of each step of creating a task.

Tasks can also be created directly by selecting *New Task...* on the *Tasks* menu, or by clicking the ☑ *New Task* button, or by selecting *New...* from the *Task Library*.

✎ *Note:* The **IR Remote** and **Display Schedule** functions are not available when using the Task Builder Wizard. To use these functions, create a New task not using the Task Builder Wizard.

Creating a New Command Task

Command type tasks perform actions on devices such as changing controls settings or performing operations.

Create a new task by selecting **New Task...** from the **Tasks** menu, or selecting **New...** from the **Tasks Library**, or click the 📋 **New Task** button on the application toolbar.
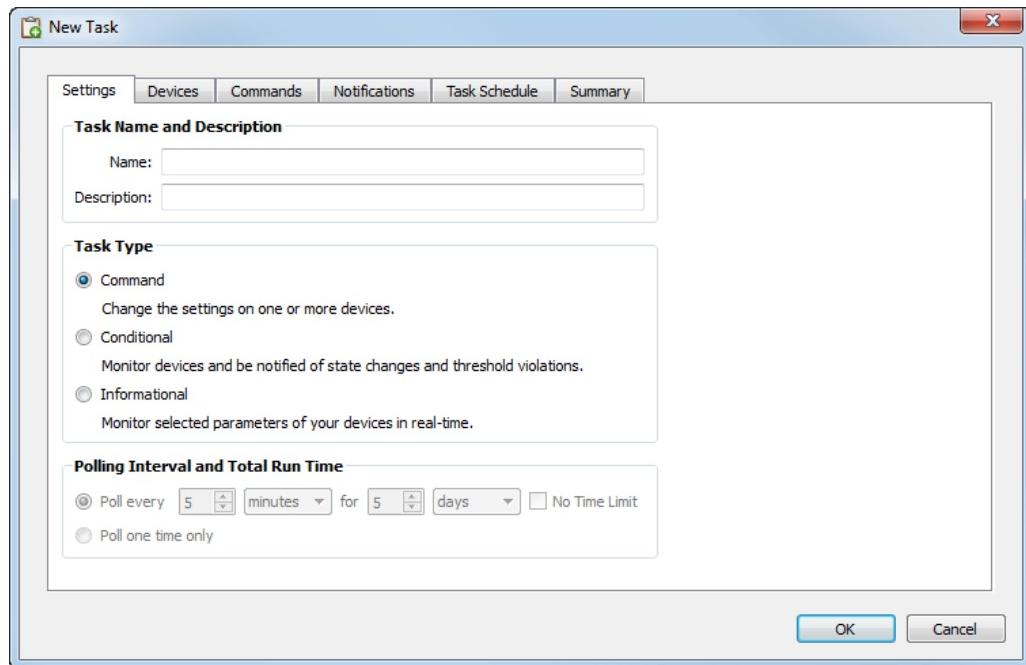
First give the task a name and description so it can be easily identified in the task list.

Next select the type of task to be created.

✎ *Note:* *Command type tasks are only performed one time each time the task run, so the Polling Interval and Total Run Time section is disabled.*

Next select the **Devices** tab and select the devices that the task will be performed on. Selecting a group will automatically select all of the devices within that group.
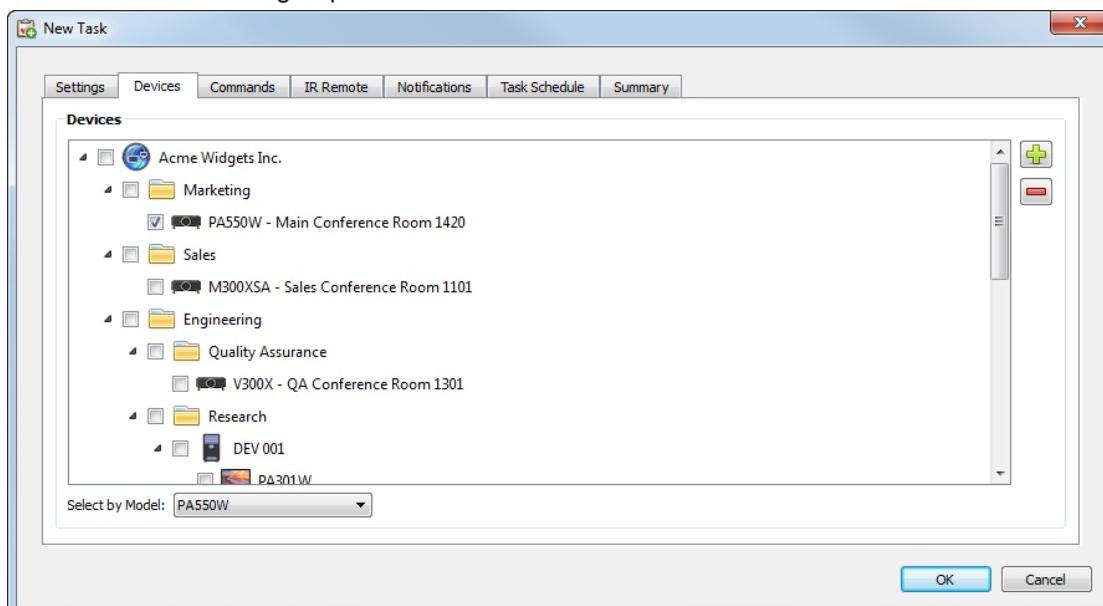
Devices can also be selected by model using the **Select by Model** listbox. Selecting a model in the list will select all matching devices in the device tree. The ⊕ button will select all devices, and the ⊟ button will clear all selected devices.

Next select the **Commands** tab and select the control(s) to be adjusted from the control list. When a control has been added to the list of commands to be performed, any parameters or settings for the control can be set.

Multiple commands can be performed in a task. For some commands the ordering may be important, and can be controlled using the ⬆ and ⬇ buttons.
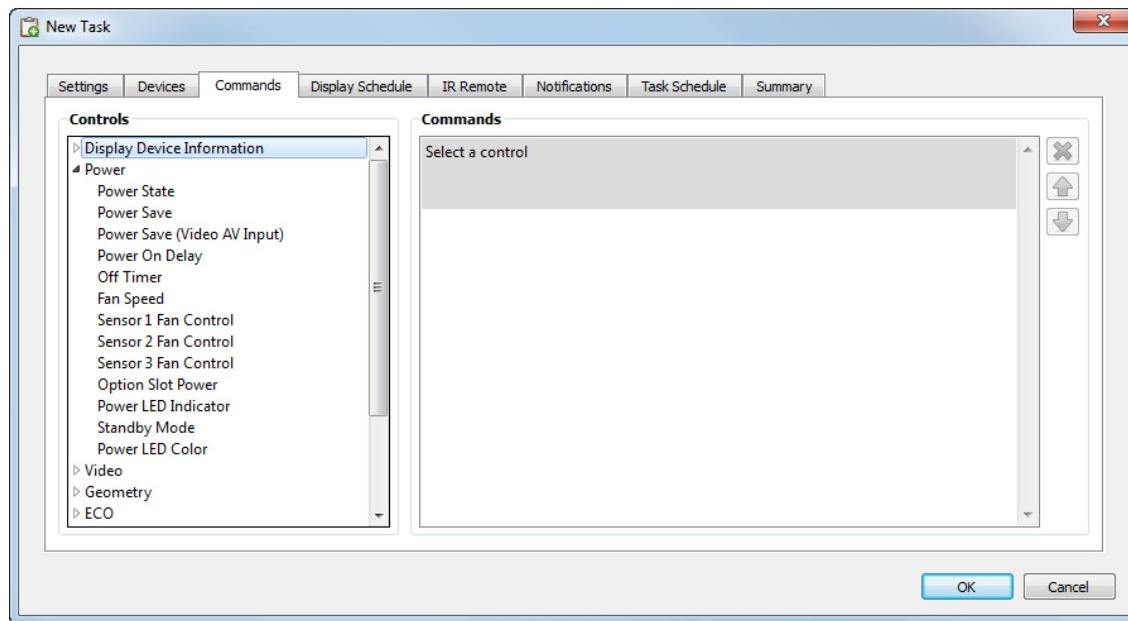
✎*Note:*

- The types of controls listed in the Commands tab depends on the types of devices selected.

- Not all devices support all of the commands and setting values listed.

- Since NaViSet Administrator allows multiple different types and models of display devices to be controlled using a single task, the controls represented are generic and not specific to any particular model of display.

  This means that the value ranges, step intervals, and even names of the controls and values may be different than those shown on a display's On Screen Display (OSD), or when adjusting a device individually using the controls on the device's Property Tab controls.

  For example, a control such as *Audio Balance* may be shown as having the range -50 to +50, or -100 to +100, or even L to R on the display's OSD, but will be represented by a control with the range 0 to 100 in a task or report. When the task is run, the value from the control will be automatically scaled to the range supported by each individual display model. So for example if the control on the display has the range -50 to +50, then a setting value of 0 in a task will be scaled to the value -50. Likewise the setting 100 will be scaled to the value +50 for that individual device when the task is run.

If one or more of the devices selected is an NEC large-screen display that supports an internal scheduling (schedules that run autonomously within the display), the *Display Schedule* tab will be shown.
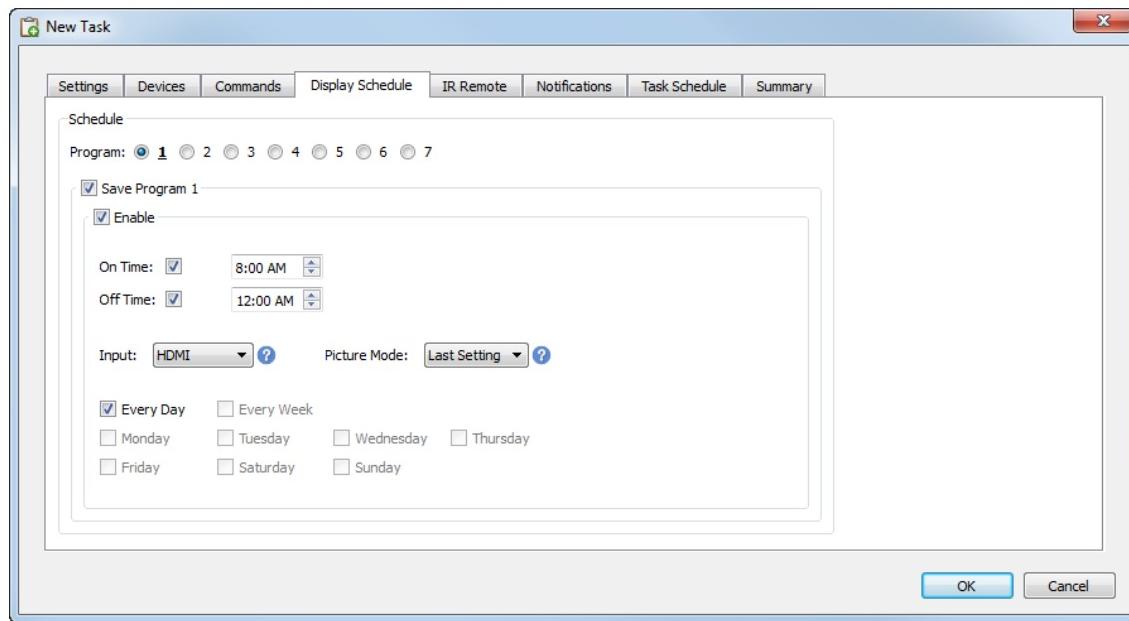
The schedule settings can be set for each of the 7 supported internal schedules to power the display on and off, as well as selecting different video inputs at specific times on specific days. The task will be used to program the display with these schedule parameters. Once the display has been programmed via the task, it is not necessary to use NaViSet Administrator to perform the task since the display will perform it automatically using the internal clock and schedule function.

✎*Note:* *The display's internal clock can be synchronized to the current date and time by using the Command "**Sync Clock with System Date/Time**" control listed in the **Power** group. This control allows the display's internal clock to be set with an offset value of from -23 to +23 hours, relative to the local time. This is useful if the display being set is located in a different time zone. So for example to set the internal clock for a display that is located in a time zone two hours ahead of the current local time, set the **Offset hrs** value to 2. All displays in this task will be set using the same offset value, so displays across multiple time zones should be split into separate tasks.*
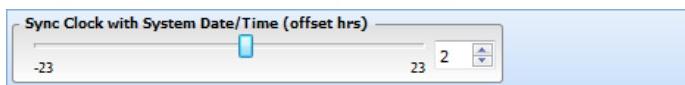
If one or more devices selected supports sending IR Remote control commands, the IR Remote tab will be shown.
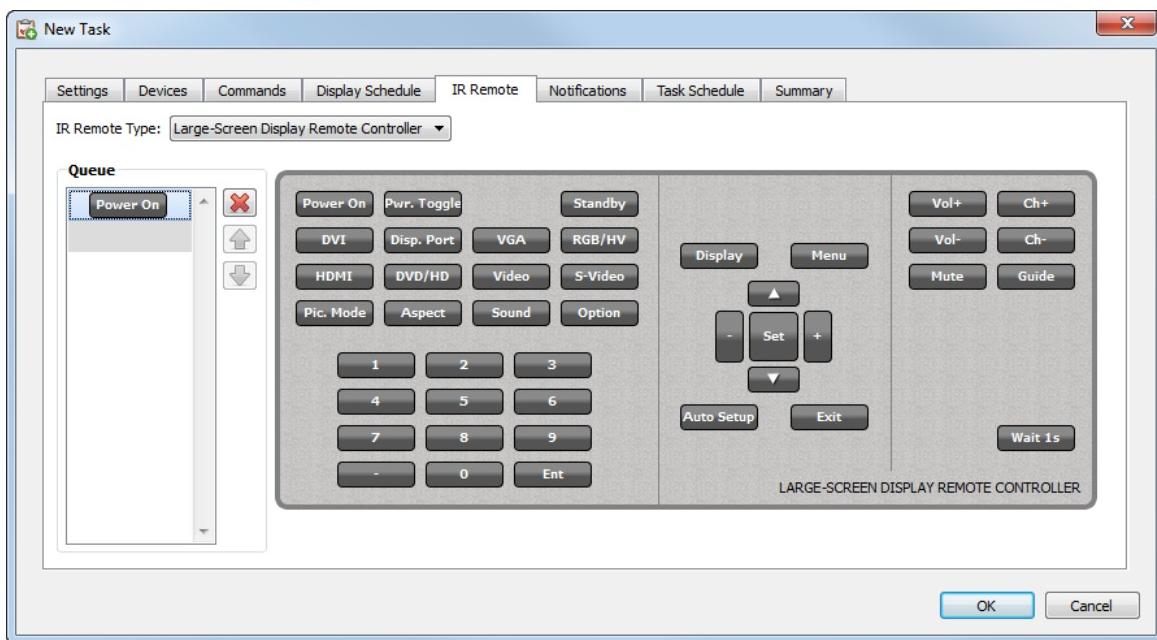
Sending IR Remote commands can be used to perform commands and access functions that may not be available via the commands in the Commands tab, but are available on the device's IR Remote control.

There are two types of remote controls, one for large-screen displays, and one for projectors. Select the appropriate type for the device being controlled before adding any commands.

Note: IR Remote Commands for the both display large-screen displays and projectors *can not be used together in a task.*

Click on the buttons in the simulated *IR Remote* to add them to the queue to be sent by the Task. Once buttons have been added to the queue, the sequence they will be sent in can be rearranged or deleted using the queue arrangement ⬆, ⬇, and ✖ buttons.

Note: Not all displays support IR Remote commands, and not all supported displays support all if the IR controls shown. No status or warning messages are displayed if a display does not support a particular IR Remote command.

Next select the *Notification* tab and optionally configure the settings to be notified via email about the status of the task.

Notifications allow the application to inform someone of the status of a task while they are away from the computer that NaViSet Administrator is running on. For example an administrator may want to be notified when a very long task involving a hundreds of devices has completed, or if an error occurred during the operation.

Note: The **Outbound Email Settings** must be configured and enabled in the application **Preferences** in order for notification emails to be sent.
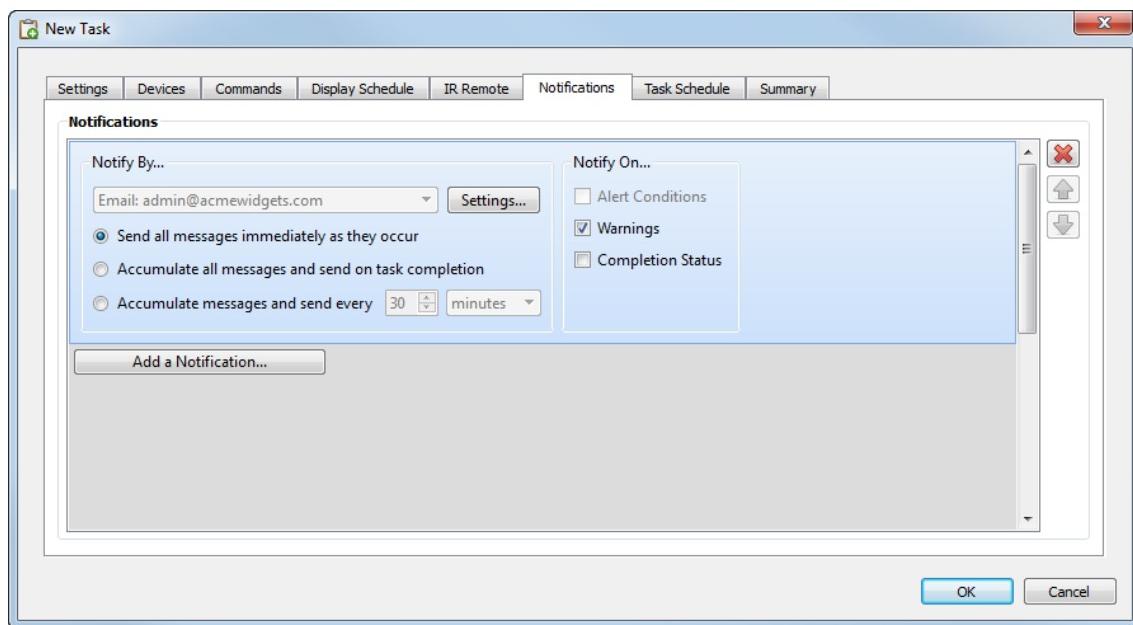
Click the *Settings...* button and enter the recipient(s) email addresses. A supplemental message to be added to the automatically generated message text can also be entered. Click *OK* when complete.
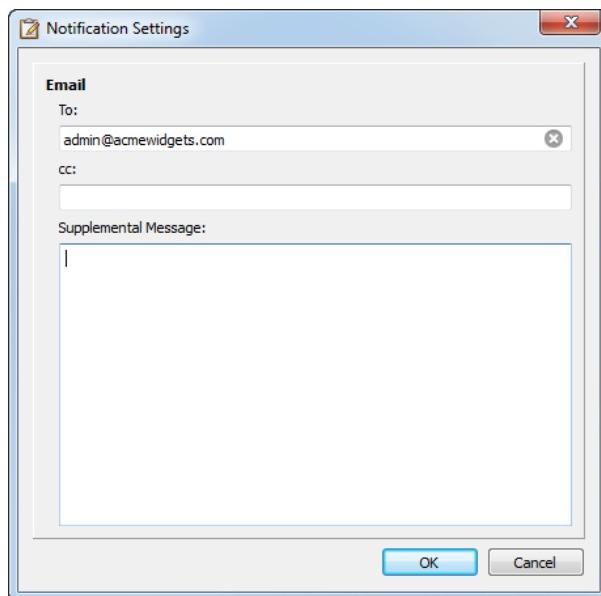
Next select the types of notifications to be sent.

Options are:

- **Alert Conditions -** Are only available when using Conditional type tasks, and are sent when the conditions specified in the task become true.

- **Warnings -** Are sent for the following conditions:

  - Connection error

  - Device might not be powered up

  - Control or setting can not be set or read

  - Task overrun

- **Completion Status -** Is sent once the task has completed.

To avoid a possible overwhelming number of messages being sent, message delivery can be controlled as follows:

- Send all messages immediately as they occur

- Accumulate all messages and send on task completion

- Accumulate messages and send every [user definable period]

Note: Multiple notifications can be added to each Task. This is useful if different recipients for different types of notification conditions are necessary. For example one person may only want to be notified when a task completes, but another person may want to be notified if there is any kind of alert or warning when the tasks runs.

Next click on the Task Schedule tab. This tab is used to set how and when the Task is started. Tasks can be set to run **On Demand** (manually started), or using a **Schedule**, or as **Temporary** (one time task that will not be saved to the Task Library).
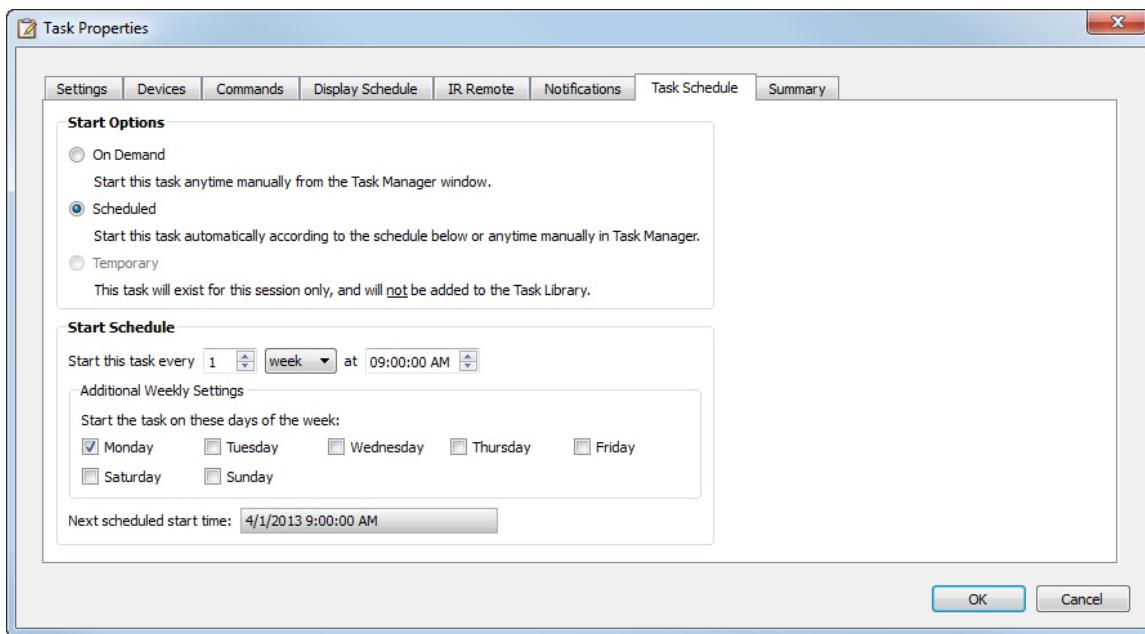
To schedule the task to run at specific times or intervals, click **Scheduled** and select the desired **Start Schedule** settings. The next time that the Task will next be automatically started is shown.

Next click on the **Summary** tab to review the settings for the new task. Click **OK** to add the newly created task to the list of tasks. The newly created task will appear in the list of *Inactive Tasks*.

Creating Conditional Tasks

Conditional Tasks are created in the same way as other types of Tasks and are typically used to warn of abnormal conditions in a device, or if a particular setting has changed. See the previous example for how to create a new task.
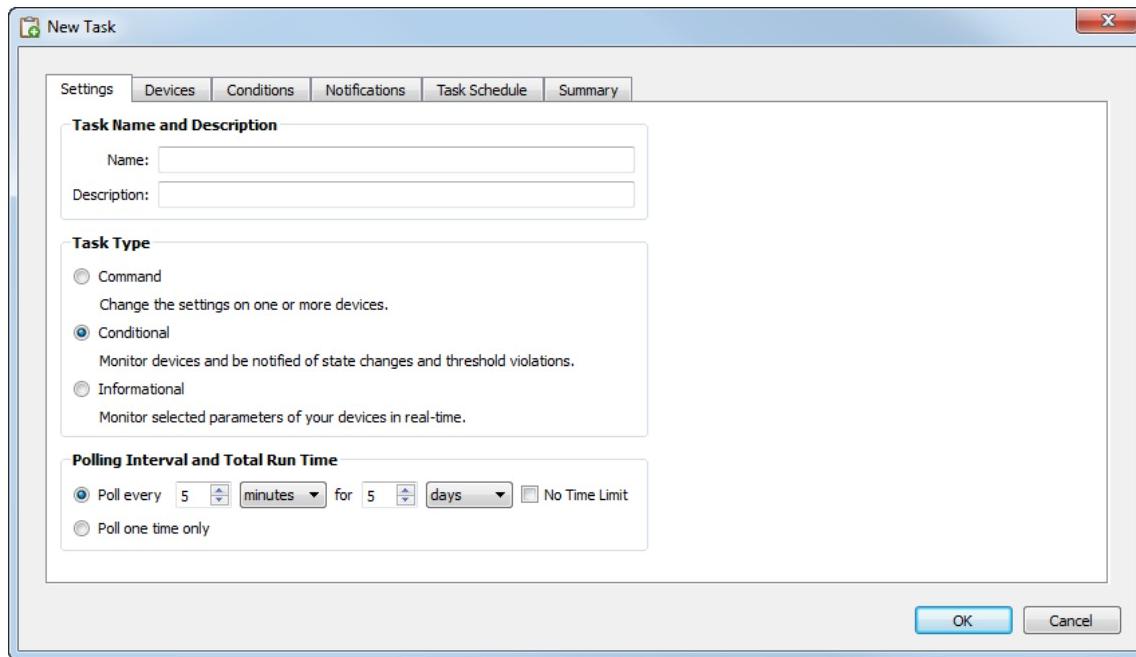
Select **Conditional** as the **Task Type**. Since this type of task is typically used to actively monitor a condition, the **Polling Interval** and **Total Run Time** are enabled and specify how often the condition(s) should be checked while the task is running.

The **Polling Interval** sets how often the devices are polled, and the **Total Run Time** specifies how long the task should keep polling once the task has been started. If the task is to run continuously until it is stopped by the user, select **No Time Limit**. Select **Poll one time only** if the task is to perform just one query and then stop.

🖉*Note:* Each task takes some time to complete, so care should be taken not to set a polling interval that is shorter than the time it takes to poll all of the devices in the task. If a task is due to poll again before the previous poll has completed, a warning message "Last Query Still Running" will be generated and the polling of all remaining devices will be skipped for that polling interval.

Next select the **Devices** tab and select the devices that the Task will be performed on.

Next select the **Conditions** tab and select device controls that are to be checked. The list of available controls will depend on the type of device(s) selected. Click on a control to add it to the list of conditions.

✐**Note:** *Not all devices will support all of the controls listed.*
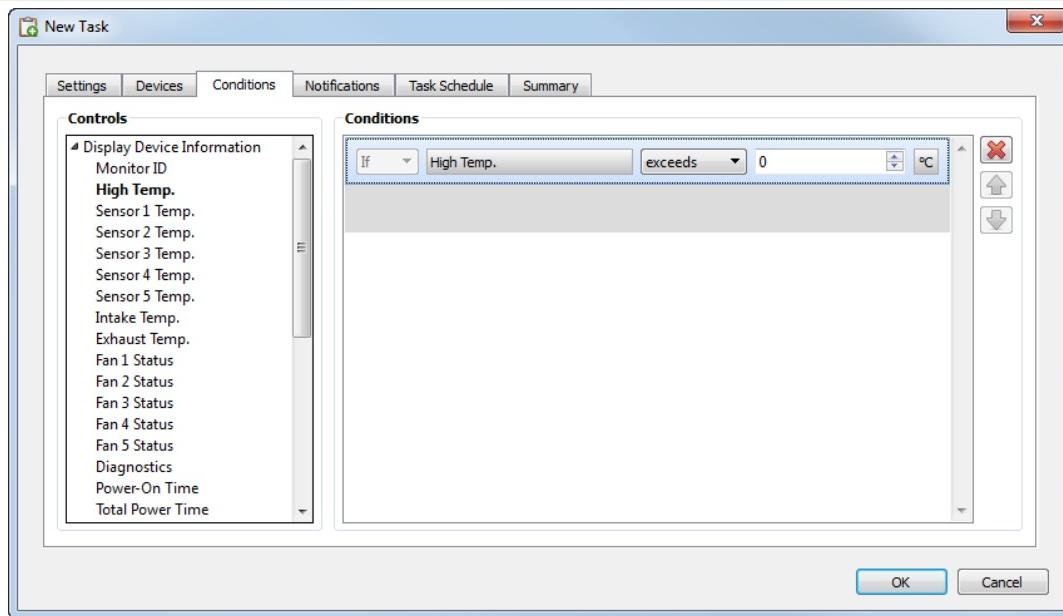
For each control that is added, an associated condition must be set. If this condition is met then a notification and/or alert will be issued. Depending on the type of control selected, different conditions will be available.

Control Value Type	Available Conditions	Examples
Numerical value	Exceeds, Falls Below, and Changes	Temperatures, Fan Speed, Human Sensor, Ambient Light Sensor
Binary or Named value	Is, Is Not, and Changes	Diagnostics, Video Input, Power State

ⓘ*Info:* *A **named value** is a control setting that has discrete selections, for example the Video Input control has named values of "Video", "HDMI", "DisplayPort" etc. A **binary** value has two states, such as "On" and "Off".*

✐**Note:** *The same limitations on control values as described in the Note on page 62 applies to Conditions. The values used to evaluate conditions may be different from the On Screen Display values.*

If more than one condition is added, the operand used to evaluate the alert condition can be selected. **AND** and **OR** operands are available. These operands apply to all conditions applied in the task.

If a selected device doesn't support a control, a warning will be issued when the tasks runs on the device.

Next select and complete the **Notification** and **Schedule** tabs in the same way as the previous example.

Click **OK** to add the newly created task to the list of Inactive Tasks.

Creating Informational Tasks

Informational Tasks are created in the same way as other types of Tasks and are used to actively monitor one or more device parameters.

Select **Informational** as the **Task Type**.
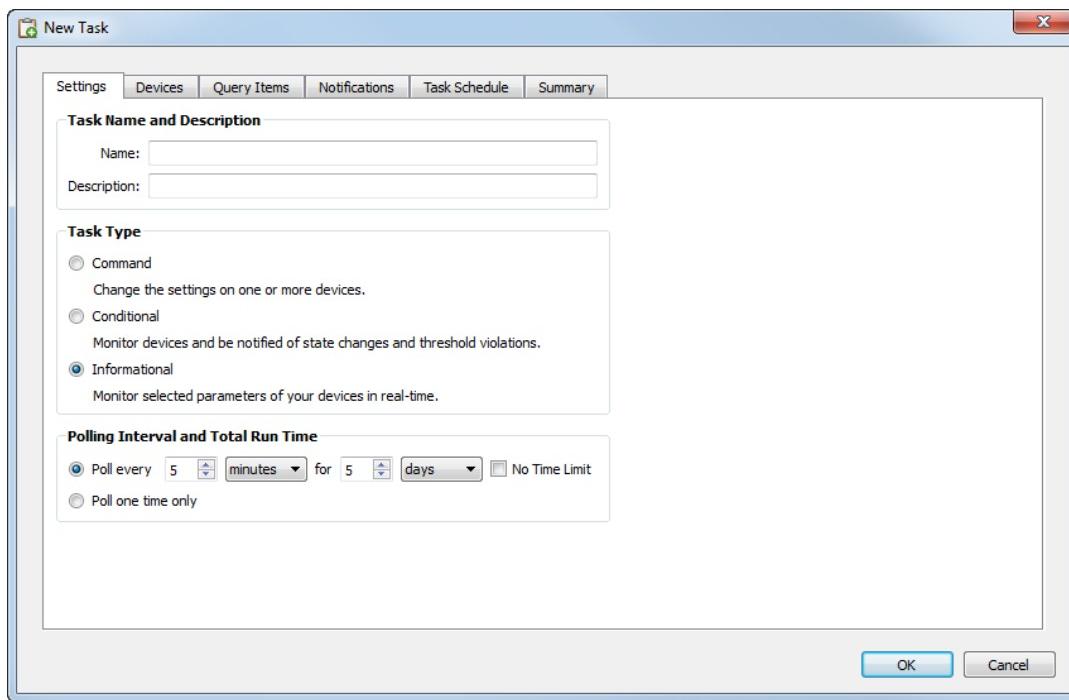
Since this type of task is typically used to actively monitor a parameter, the **Polling Interval** and **Total Run Time** are enabled and specify how often the condition(s) should be checked while the task is running.

The **Polling Interval** sets how often the devices are polled, and the **Total Run Time** specifies how long the task should keep polling once the task has been started.

Note: Each task takes some time to complete, so care should be taken not to set a polling interval that is shorter than the time it takes to poll all of the devices in the task. If a task is due to poll again before the previous poll has completed, a warning message "Last Query Still Running" will be generated and the polling of all remaining devices will be skipped for that polling interval.

Next select the **Devices** tab and select the devices that the Task will be performed on.

Next select the **Query Items** tab and select device controls that are to be monitored.
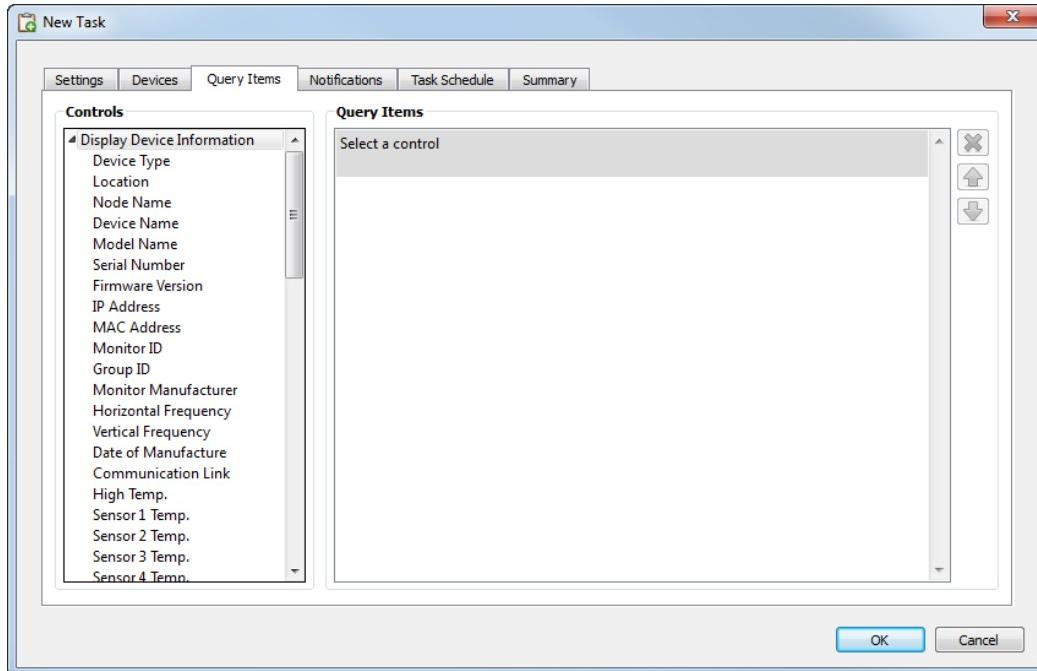
✎Note: *The list of available controls will depend on the type of device(s) selected. Not all devices will support all of the controls listed. The same limitations on control values as described in the Note on page 62 applies to the control values read from devices. The values shown may be different from the On Screen Display values.*

Next select and complete the **Notification** and **Schedule** tabs.

Click **OK** to add the newly created task to the list of tasks.

While any task is running, the results can be viewed in real time by clicking the 📷 **Watch** button in the **Active Task** list. A **Task Viewer** window will be opened that shows each device and query. The queries for individual devices can be filtered by selecting the device from the **Query Results** list.
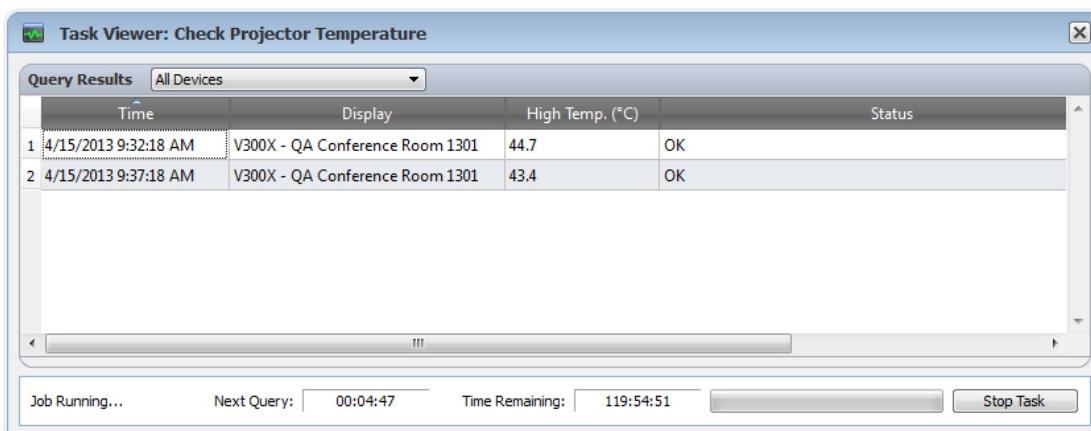
Task History

The *Task History* window shows the operation history for a particular Task. To view the Task History, click the 🔳 button for a task in the *Inactive Tasks* list, or select the desired tasks and click *History...* from the *Task Library* dialog.
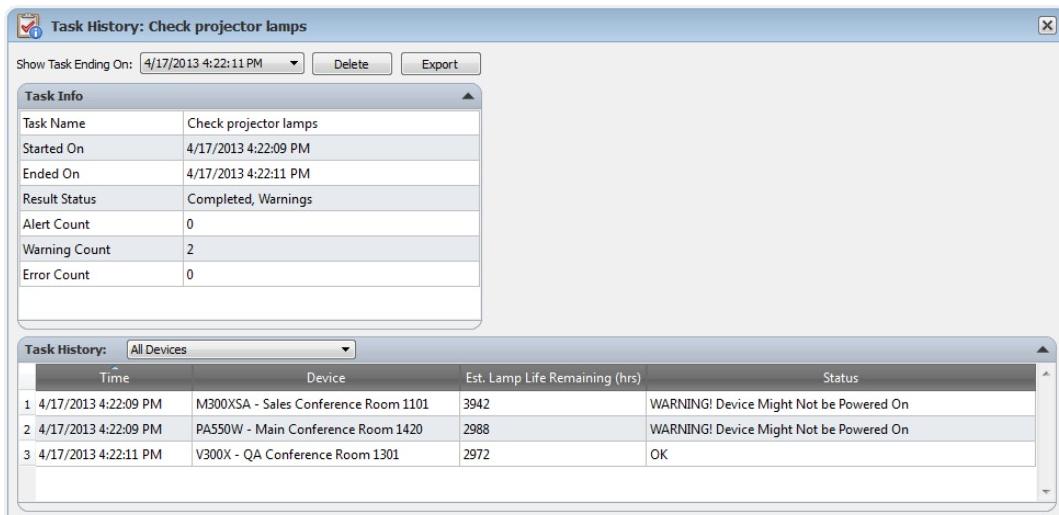
The history for each time the task has been run can be selected in the **Show Task Ending On:** list. The **Task Info** list shows a summary of the task results, including the number of alerts, errors and warnings that were encountered. The **Task History** list shows the results for each device in the task. The list can be filtered by device name by selecting a device from the listbox.

✎ *Note:*

- More detailed information about a device in the list can be seen by mousing the cursor over the *device* column.

- Clicking on a row will automatically select the corresponding device in the *Device Tree*.

- Double-clicking a row will open and select the device tab.

The history for the currently selected task run can be exported via the clipboard, Excel or delimited text file by clicking the **Export** button.

The history for the currently selected task run can also be deleted by clicking the **Delete** button.

Chapter

8

Reports

About Reports

Reports are operations that gather selected setting values and information from one or more devices, and create a report of the results.

These operations can be performed either in real-time (meaning devices are queried when the operation is run), or using information stored in the database for each device. A hybrid query that will only query devices if the data in the database is older than a given time period can also be specified. This option is useful to reduce unnecessary real-time queries on devices, since they are much slower than querying the database.

The results of a report can be saved to the database, and also to an output file such as an Excel spreadsheet, or delimited text file. When saved to the database, the report results can be viewed at any time using the *Report History* viewer. Report results are stored for each time a report is generated and each can be selected, thus providing a history of the report over time.

Example uses of reports are:

- Keeping track of computers and displays within an organization, by logging the device name, model, serial number and asset tags.

- Keeping track of the number of operating hours that displays have been in use, the carbon savings, or any other parameter or supported setting that can be read from a device.

Report Library

All Reports can be managed using the *Report Library*, available on the *Reports* menu, or by clicking on the toolbar button. Reports can be created, edited, duplicated, and deleted from within the *Report Library*. The execution history of a report can be viewed and exported.
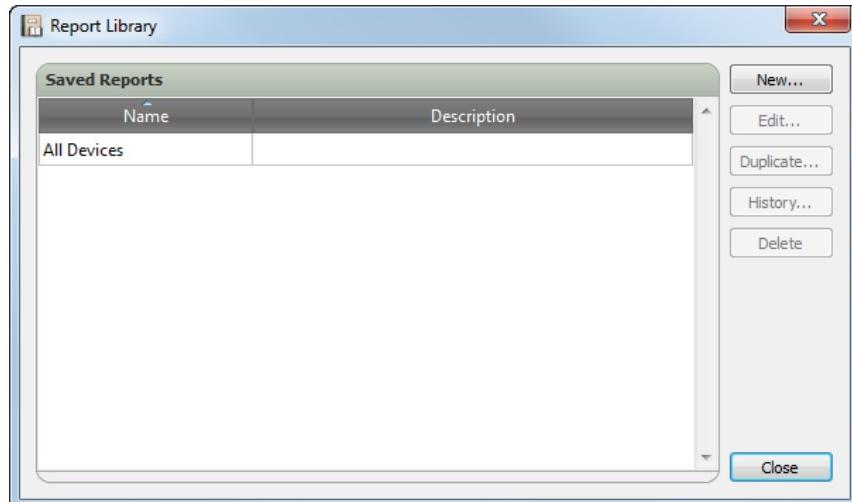
Report Manager

All Reports that have been created for the current database are listed in the *Report Manager* tab.

This tab shows:

- Inactive Reports that are not currently running
- Active Reports that are currently running
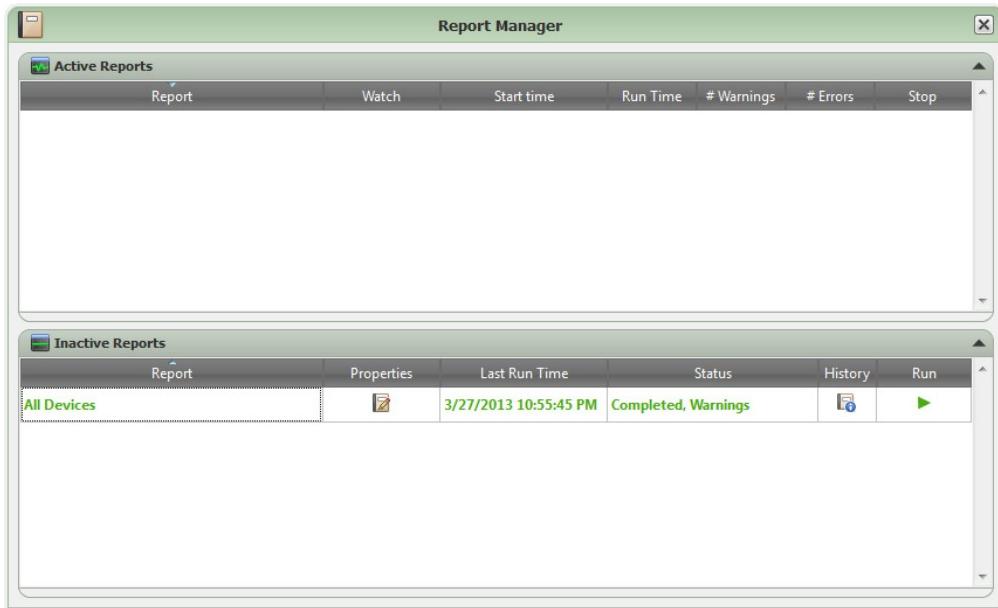
Inactive Reports list

Inactive Reports are reports that have been created but are not currently running.

A Inactive Report can be made to start immediately by clicking the ▶ *Run* button, and will be moved to the Active Reports list while it runs.

The properties of a Report can be edited by clicking on the 📝 *Properties* button. This is the same as editing a task from the *Report Library*.

The history of a report can be viewed by clicking the 📋 *Report History* in an inactive report. This is the same as viewing the history from the *Report Library*. The report history shows the results of each time the report has been executed.

Active Reports list

Active Reports are reports that are currently being run. For *Database Report* types, where all of the information is being queried from the current database, a report may be active for only a fraction of a second while it is processed. *Real-time Reports* may take up to several hours to process depending on the number and type of networked devices that are being queried. Once an *Active Report* has completed being processed, it will be moved to the *Inactive Report* list.

While a report is active, the progress of the task can be viewed in real-time by clicking the 🔍 *Watch* button. An *Active Report* can also be manually stopped by clicking the ■ *Stop* button.

The number of alerts, warnings or errors that occur while a report is running are shown.

Creating Reports

Reports can be created by selecting *New Report...* on the *Reports* menu, or by clicking the 🗎 *New Report* toolbar button, or by selecting *New...* from the *Report Library*.

On the **Settings** tab, first give the report a **Name** and **Description** so it can be identified easily in the Reports list.

Next select the type of report to be created.

Database Reports: Use the current information for each device stored in the database to create a report. No devices are queried, so this operation is very fast, however the information may not reflect the current condition of each device. The *Time Stamp* column, added to reports by default, lists the date and time when the information for each device was last updated.

Real-time Reports: Queries devices to gather the latest setting values and information. This can be selected to always query the devices, or only query a device if the information in the database has not been updated within a selectable time period. This is useful in order to minimize the number of device queries that are made, while at the same time keeping the device information in the database up to date.

Note: *If a device cannot be accessed during a Real-time Report (for example if it is powered off, disconnected, network configuration settings have changed, or is otherwise inaccessible), the icon shown in the device tree will change to show a warning symbol. In this case, the most recent information from the database for the device will be substituted in the report.*

*Whenever database data for a device is substituted in a report because the device could not be accessed, a message **"WARNING! Data May Be Out of Date"** will be shown in the report's Status column for the device. The **Time Stamp** column of the report indicates the date and time of each query or database record for the device.*

Info: *Whenever a Real-time report is performed on a device, the database information for the device is automatically updated with the equivalent of performing a **Standard Update**. As a result any new displays connected to a Windows computer will also be automatically detected and updated.*
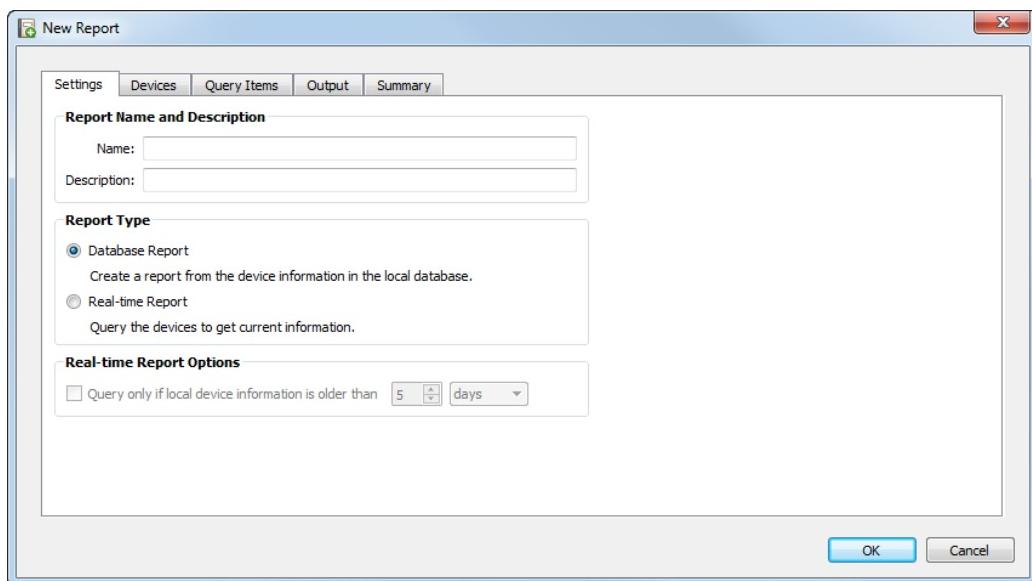
Next select the **Devices** tab and select the devices to be included in the Report. Selecting a group will automatically select all of the devices within that group.
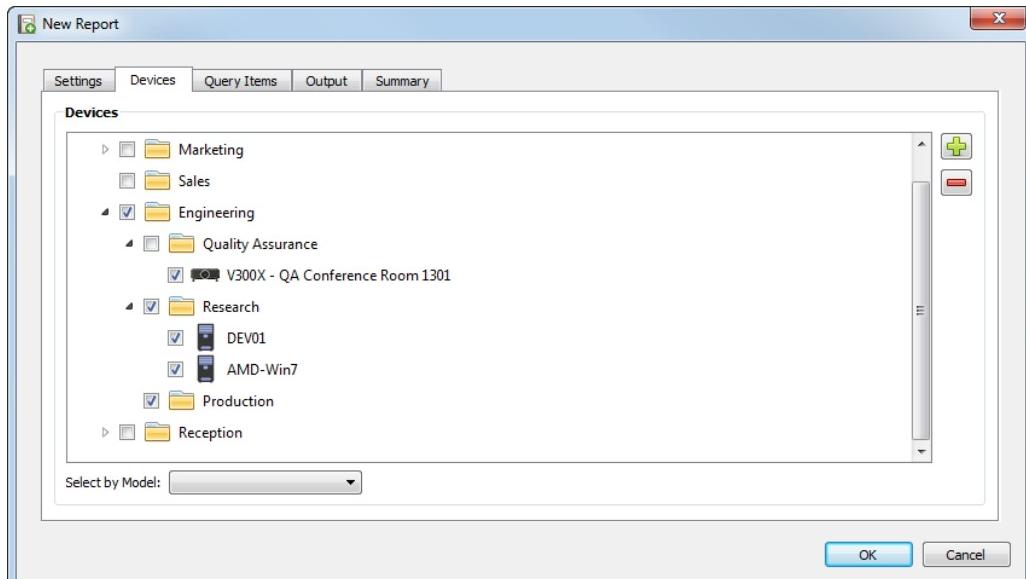
✎Note: *Windows computers and daisy-chained large-screen displays are shown in the device tree in the Devices tab without any child devices (attached displays for Windows computers, and individual daisy-chained large-screen displays for daisy-chain hosts). These child devices will be determined when the Report operation is actually run, and automatically added to the report.*

Next select the **Query Items** tab.

The list of controls contains all of the information and settings that can be gathered from the types of devices that have been selected.

The *Query Items* list contains all of the items to be queried for the selected devices. Some query items are automatically included by default as they are necessary to uniquely identify each device in the report. The order of the items in a report can be changed and items can be removed using the ⬆, ⬇, and ✖ buttons.

Click on a control in the list to add it to the *Query Items* list.
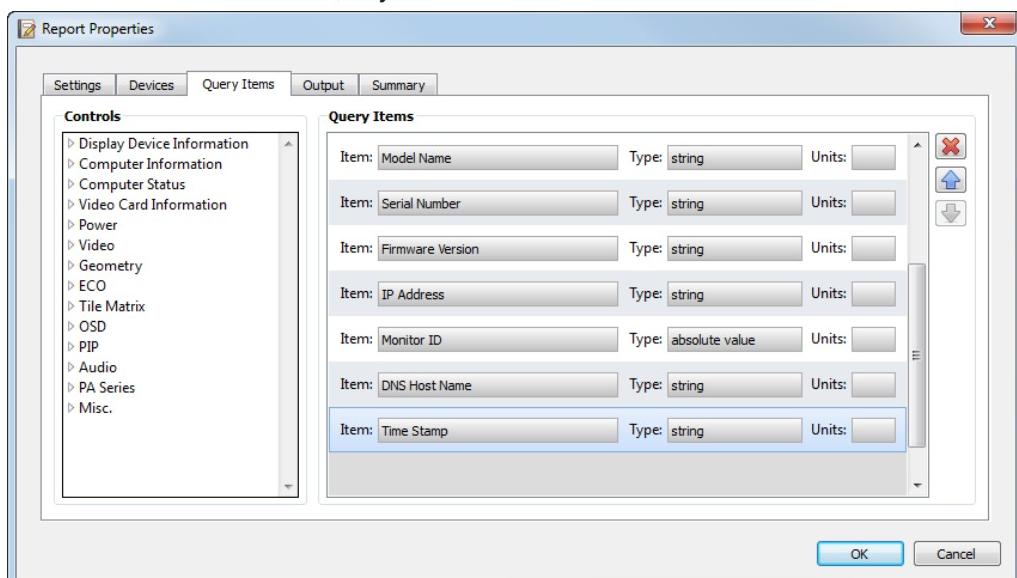
Note: Not all devices will support all of the controls listed.

Next select the **Output** tab

The results of a query can be saved to the database by selecting **Save results to database**. This allows the results of a particular query to be viewed later in the *Report History*. If this option is not selected then the results of the query will only be available in the output format selected.

The results of a query can also be saved to a file in any of the following formats by selecting **Output To File** and clicking **Select...** and selecting an output file name and type:

- Excel spreadsheet in .xls or .xlsx format
- Tab delimited text file
- Comma delimited text file

If an Excel spreadsheet is selected, the formatting of the spreadsheet can be selected to either *Default* or *Plain*. The *Default* formatting applies cell coloring to make data easier to read.

Note: If the Preferences setting **Open report files on completion** is selected, then the default application associated with the selected file type will be used to open the file once the report has completed.
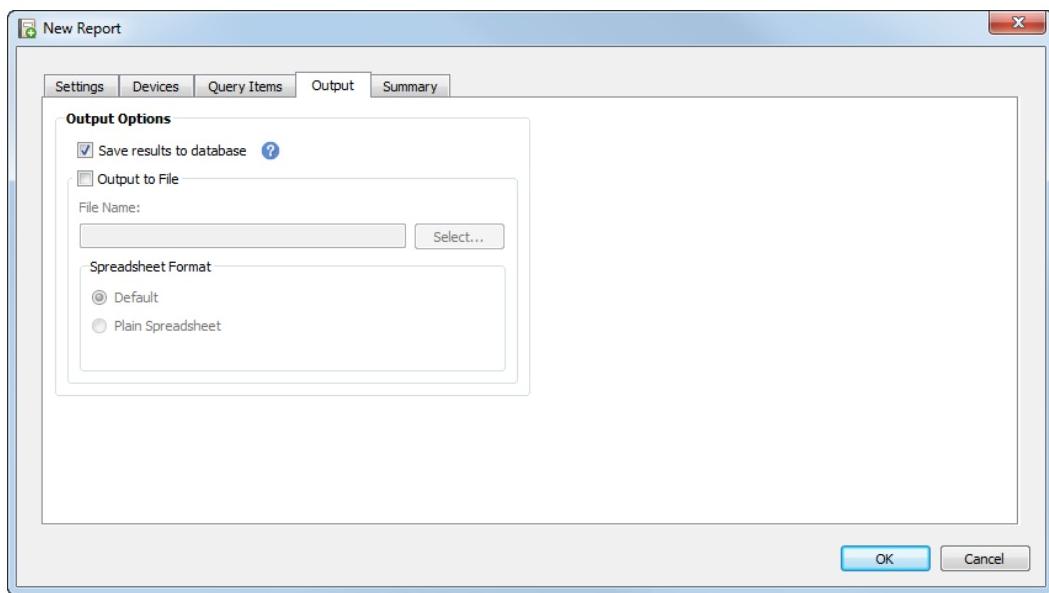
Next click the **Summary** tab to review the settings for the new Report. Click **OK** to add the newly created report to the list of reports. It will appear in the list of *Inactive Reports*.

Report History

The *Report History* window shows the operation history for a particular Report. To view the *Report History*, click the History button for a task in the Inactive Reports list, or select the desired report and click **History**... from the *Report Library* dialog.

Report History: All Devices							
Show Report Ending On:	4/15/2013 12:48:46 PM ▼	Delete	Export				

Report Info ▲

Report Name	All Devices
Started On	4/15/2013 12:48:46 PM
Ended On	4/15/2013 12:48:46 PM
Result Status	Completed
Alert Count	0
Warning Count	0
Error Count	0

Report Data: All Devices ▼ ☐ Enable Column Sorting ▲

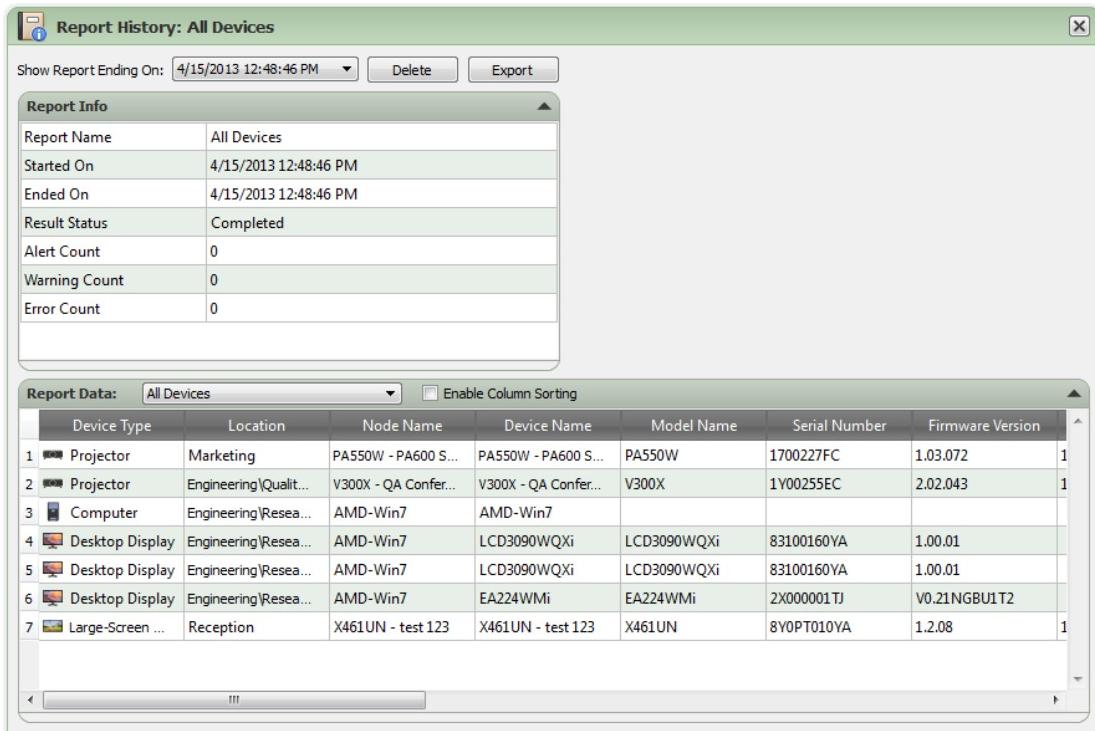|	Device Type	Location	Node Name	Device Name	Model Name	Serial Number	Firmware Version	
1	Projector	Marketing	PA550W - PA600 S...	PA550W - PA600 S...	PA550W	1700227FC	1.03.072	1
2	Projector	Engineering\Qualit...	V300X - QA Confer...	V300X - QA Confer...	V300X	1Y00255EC	2.02.043	1
3	Computer	Engineering\Resea...	AMD-Win7	AMD-Win7				
4	Desktop Display	Engineering\Resea...	AMD-Win7	LCD3090WQXi	LCD3090WQXi	83100160YA	1.00.01	
5	Desktop Display	Engineering\Resea...	AMD-Win7	LCD3090WQXi	LCD3090WQXi	83100160YA	1.00.01	
6	Desktop Display	Engineering\Resea...	AMD-Win7	EA224WMi	EA224WMi	2X000001TJ	V0.21NGBU1T2	
7	Large-Screen ...	Reception	X461UN - test 123	X461UN - test 123	X461UN	8Y0PT010YA	1.2.08	1

The history for each time the report has been run can be selected in the **Show Report Ending On:** list.

The **Report Info** list shows a summary of the report results, including the number of alerts, errors and warnings that were encountered.

The **Report Data** table shows the results for each device in the task. The table data can be filtered by device type by selecting a type from the **Device Type** listbox.

✎*Note:*

- Clicking on a row will automatically select the corresponding device in the *Device Tree*.

- Double-clicking a row will open and select the device tab.

- Report History can be sorted by column, by selecting **Enable Column Sorting** and then clicking on the header of the column to sort by. The sorting order can be reversed by clicking on the column header again.

History for the currently selected report run can be exported via the clipboard, Excel or delimited text file by clicking the **Export** button.

History for the currently selected report run can also be deleted by clicking the **Delete** button. History for a Report is retained until it is deleted.
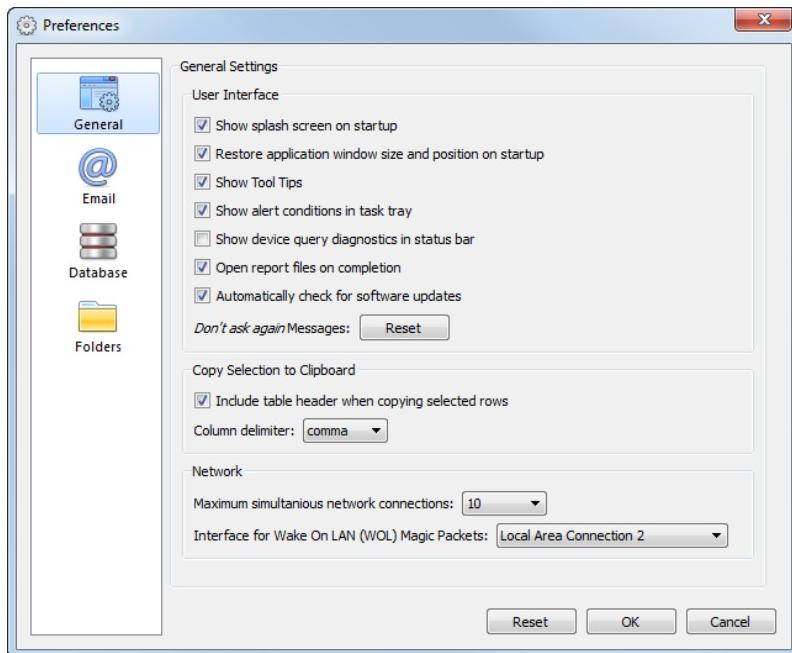
Chapter

9 Preferences

About

The *Preferences* dialog is used to configure many of the application settings and is accessed from the *Tools* menu.

Preference settings are grouped into pages which are selected using the icons on the left of the window.

Click *Reset* to restore the default values for all of the setting on the currently selected page.

General Settings

- **Show splash screen on startup -** When selected, a splash screen will be shown briefly when NaViSet Administrator is started.

- **Restore application window size and position on startup -** Saves and restores the application's window size and position.

- **Show Tool Tips -** When selected, Tool Tips for various controls within the application are shown when the cursor is moused over the control.

- **Show alert conditions in task tray -** If an alert condition occurs, a popup message will be shown in the Windows Task Tray.
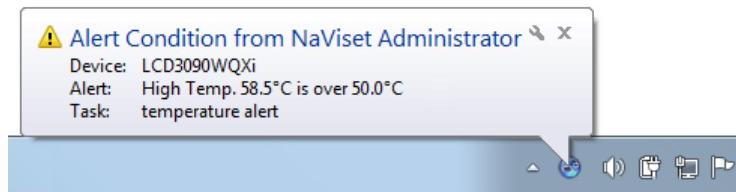
- **Show device query diagnostics in status bar -** When selected, the status bar in the main window will show a summary of the number of connections to different devices that are currently being processed, and the number of pending connections that are waiting either for an available connection, or for another connection to the same device to be completed. The *Maximum simultaneous network connections* setting sets the limit for the number of connections that can used at one time.

Note: Only one connection per device is allowed at a time. Therefore if there are two or more separate operations to be performed on a device, only one will be current and the others will be pending until the running job has completed, at which point a pending connection will become current.


- **Open report files on completion -** When selected, the output file (Excel or delimited text file), or *Report History* window (if no output file is specified) will be automatically opened when a Report operation has completed.

- **Automatically check for software updates -** When selected, the application will periodically automatically check to see if a newer version is available by querying the NEC update servers. An Internet connection is required.

- **Don't ask again messages: Reset -** Restores the displaying of any messages that may not be being shown because *Don't ask again* was selected when they previously appeared.

- **Maximum simultaneous network connections -** Sets the maximum number of network connections that can be made to different devices on the network. NaViSet Administrator can communicate to multiple devices in parallel, which speeds up operation by allowing simultaneous connections, and allows more operations to be performed while waiting for other devices to respond to commands. 5, 10, 20, or 30 connections can be selected, and default value is 10 connections.

Note: In general increasing the number of network connections increases the overall speed at which operations on large numbers of devices can be performed. However there is a point where more connections does not give an increase in speed due to the speed of the computer and other factors.

- **Interface for Wake On Lan (WoL) Magic Packets -** When using *NaViSet Administrator* to remotely wake up a computer using the WoL protocol, UDP packets are broadcast from the network adapter. If the computer running *NaViSet Administrator* has multiple network interfaces, for example wired and wireless, the interface to broadcast the WoL packets from can be selected.

Note: In order for WoL to work correctly, UDP port 9 must not be blocked by any firewalls or routers. See Appendix B on page 101 for details on configuring WoL.

Email Settings
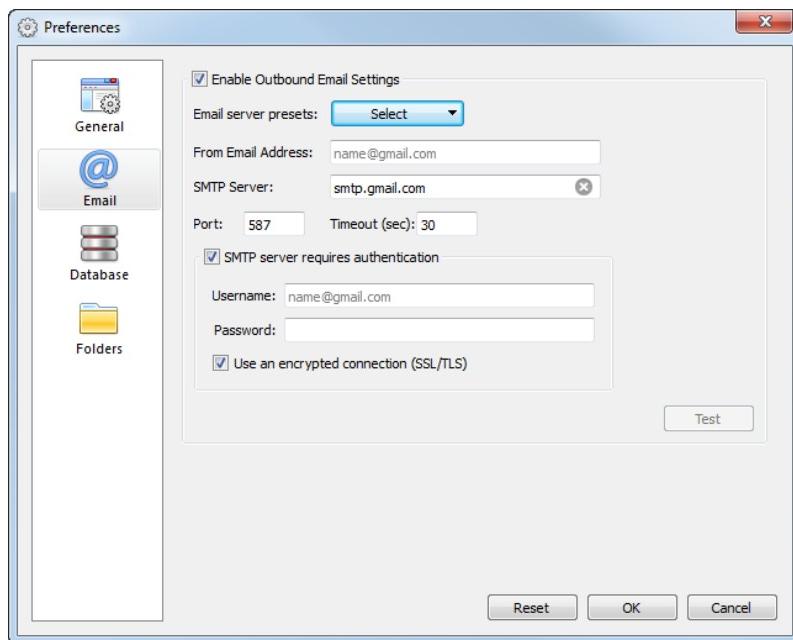
- **Enable Outbound Email Settings -** When selected, *NaViSet Administrator* will enable the sending of notifications via email. Notifications are used in *Tasks* to broadcast conditions such as Alerts, Errors, Warnings and Completion of a particular Task. When not selected, all email notifications are disabled.

- **Email server presets -** This list allows for easy configuration of the email server settings for several popular email services. The SMTP server, port, authentication requirement, and use of SSL/TLS are configured. Other settings such as the *From Email Address*, *username* and *password* must be entered. After selecting one from the list, be sure to Test for correct operation since email service providers may change these parameters without notice.

- **From Email Address -** This is the email address from which messages sent by *NaViSet Administrator* will be sent.

- **SMTP Server -** This is the SMTP (Simple Mail Transfer Protocol) server to be used to send the email.

- **Port: -** This is the port to be used to contact the SMTP server. Note that some Internet Service Providers may block certain ports such as 25 used for sending email. Check with your SMTP server to find out which ports are supported. Typically used ports are 25 and 587.

- **Timeout (sec): -** Specifies the timeout period when trying to send an email via the SMTP server.

- **SMTP server requires authentication -** Select this if the SMTP server requires that authentication credentials be provided in order to send an email.

- **Username: -** The username to be used for authentication with an SMTP server. This may be in the form of an email address depending on the server.

- **Password: -** The password to be used for authentication with an SMTP server.

- **Use an encrypted connection (SSL/TLS) -** Select this if the SMTP server requires that the authentication credentials be encrypted by using SSL/TLS (Secure Sockets Layer / Transport Layer Security) before sending.

- **Test -** Confirms connectivity and credentials with the email server.

Database Settings
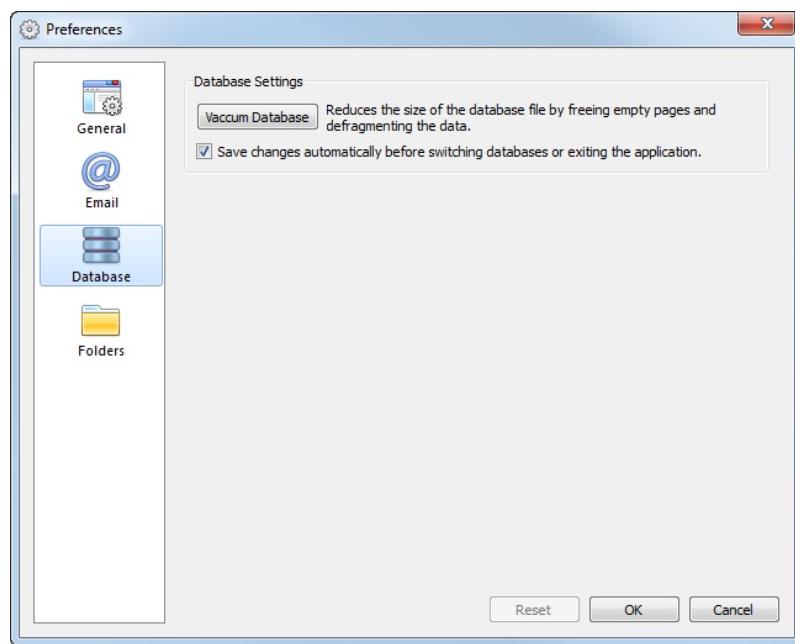
- **Vacuum Database -** Click this button to compact the size of the database file by removing unused entries and defragmenting the data.
- **Save changes automatically before switching databases or exiting the application.**

Folders
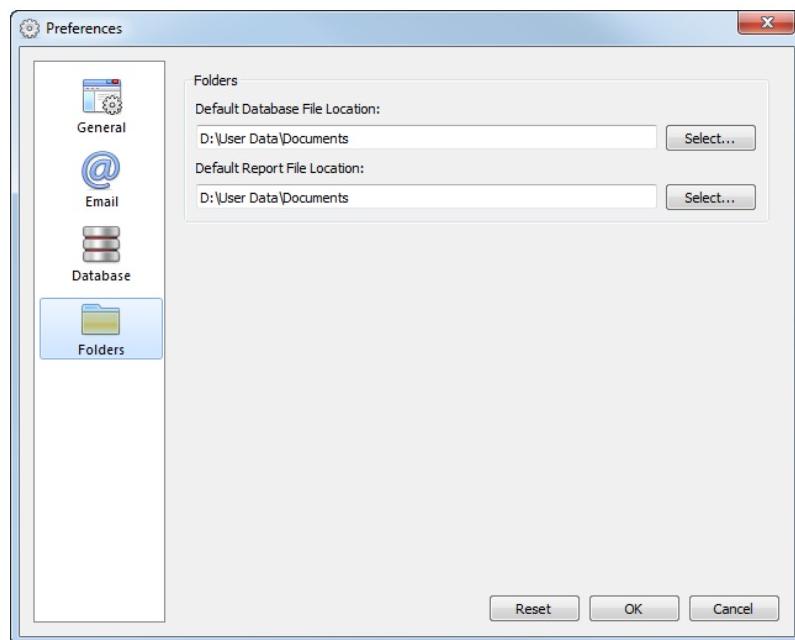
- **Default Database File Location -** Used to select the location where database files are stored by default.
- **Default Report File Location -** Used to select the location where exported Report output files are saved by default.

Chapter

10 Usage examples

This chapter gives some step-by-step examples for configuring and running typical Tasks and Reports.

Example Task: Turn displays on and off at set times every weekday

In this example, displays will be configured to turn on and off at set times using two tasks; One to turn display power on, and another to turn display power off. First a task to turn the display power on at certain times and days will be created, then duplicated, and then modified to turn off instead of on, and with the power off times.

1. Create a new Task by clicking the New Task ![icon] toolbar button, or selecting **New Task...** from the **Tasks** menu.

2. Enter a **Name** and **Description** for the task to indicate the purpose of the task - in this case powering on displays.
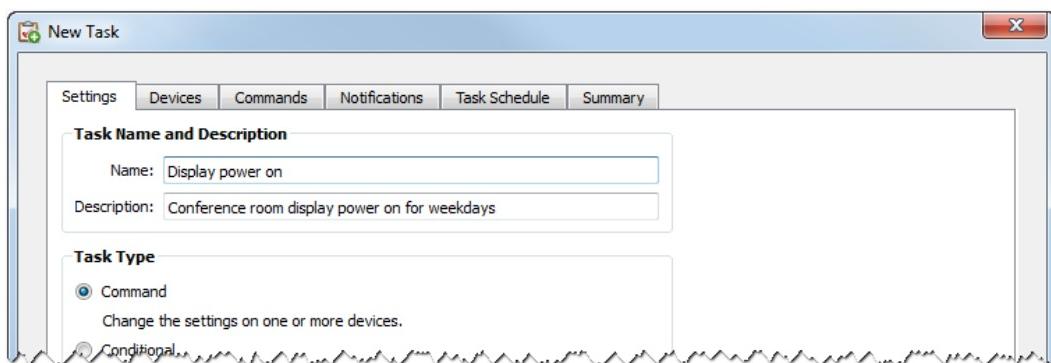

3. Select the Task Type: **Command**

4. On the **Devices** tab, select the devices to be controlled.

5. On the **Commands** tab, open the **Power** section on the **Controls** list, and select **Power State** to add it to the list of commands.
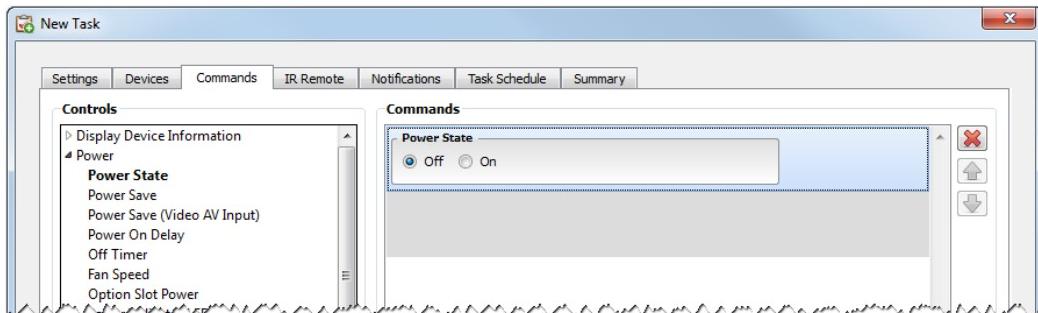
6. In the list of commands, select the Power State: **On**.

7. On the **Task Schedule** tab, select Start Options: **Scheduled**.

8. In the **Start Schedule** section, select the desired time and days on which to turn the displays on.
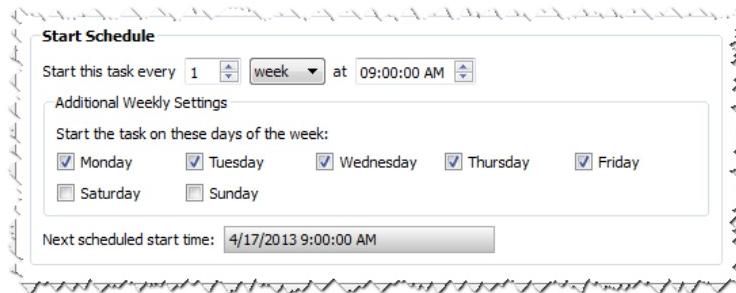
9. On the **Summary** tab review the Task settings, and click **OK**.

10. Next to easily configure the power off times, open the **Task Library**, select the task that was just created and click **Duplicate...**
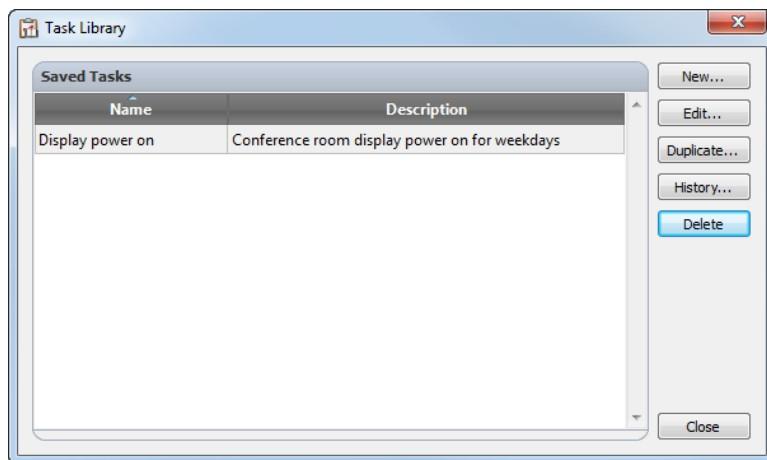
11. On the **Settings** tab edit the Task **Name** to indicate that this duplicated task is for power off.

12. On the **Commands** tab change the **Power State** command selection from On to **Off**.

13. On the **Task Schedule** tab select the desired Off time for the displays.

14. On the **Summary** tab review the Task settings, and click **OK**.

15. There will now be two new tasks listed in the **Inactive Tasks** list that will automatically run on the selected days and times. The green background in the **Next Start Time** column indicates the tasks will run automatically at the time indicated.

Example Task: Check for projector lamps close to needing replacement

In this example, a task to check to see if the estimated lamp life remaining for projectors is below a specified number of hours limit is created. This is recommended in order to perform proactive ordering of replacement lamps and maintenance. The task will be set to run once every week, and an email will be sent to the administrator if any projector's estimated lamp life remaining is less than 100 hours.

1. Create a new Task by clicking the New Task ![icon] toolbar button, or selecting **New Task...** from the **Tasks** menu.

2. Enter a **Name** and **Description** for the task to indicate the purpose of the task.
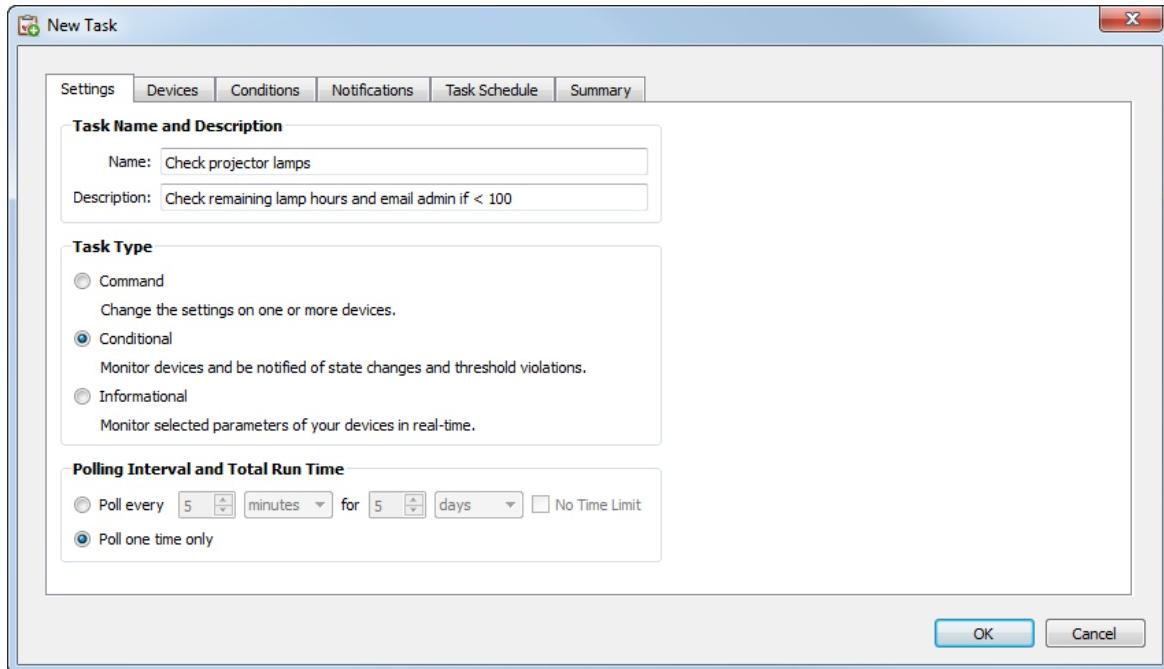
3. Since the task will check the condition of a value, select the *Task Type:* **Conditional.**

4. Since it is only necessary to check each projector once each time the task is run, select *Polling Interval and Total Run Time:* **Poll one time only**.

5. On the **Devices** tab, select the projectors to be checked.

6. On the **Conditions** tab, open the **Display Device Information** section on the **Controls** list, and select **Est. Lamp Life Remaining** to add it to the list of conditions.

7. Change the condition to *falls below* and enter 100 as the *hrs* value.
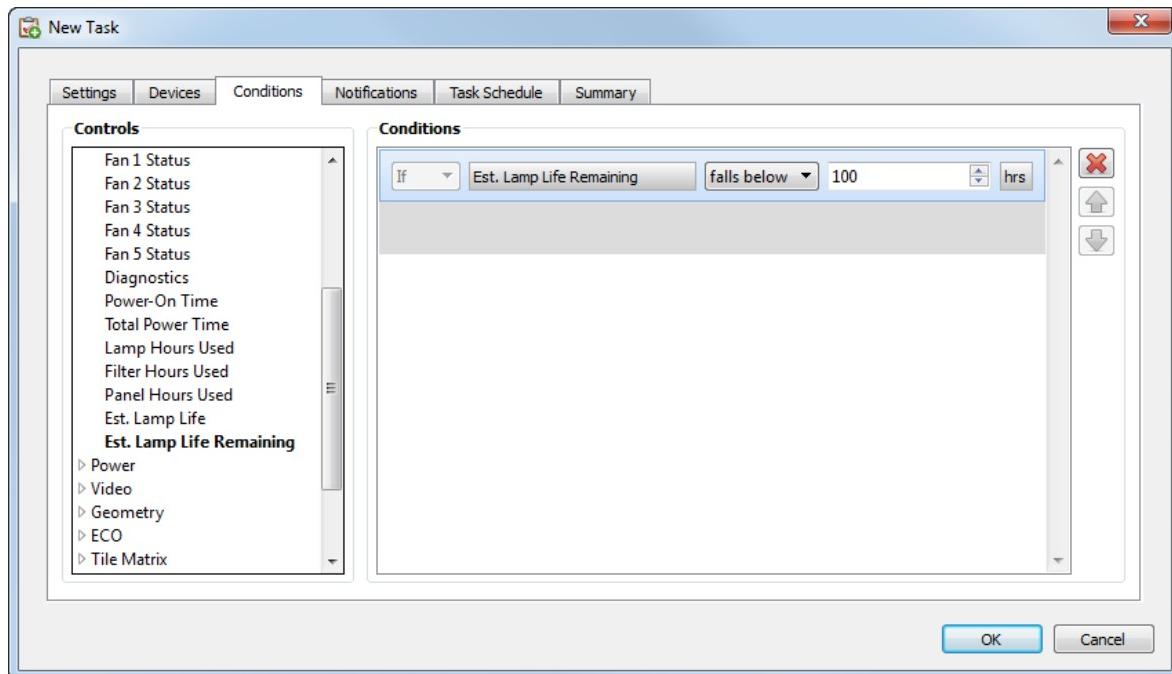
8. On the **Notifications** tab, click **Add a Notification...**, enter the recipients email address and click **OK**.

9. Since the administrator doesn't need to know immediately for each individual projector if the condition is true, select **Accumulate all messages and send on task completion**. This way only one email will be sent listing any projectors for which the lamp lifetime condition is true.
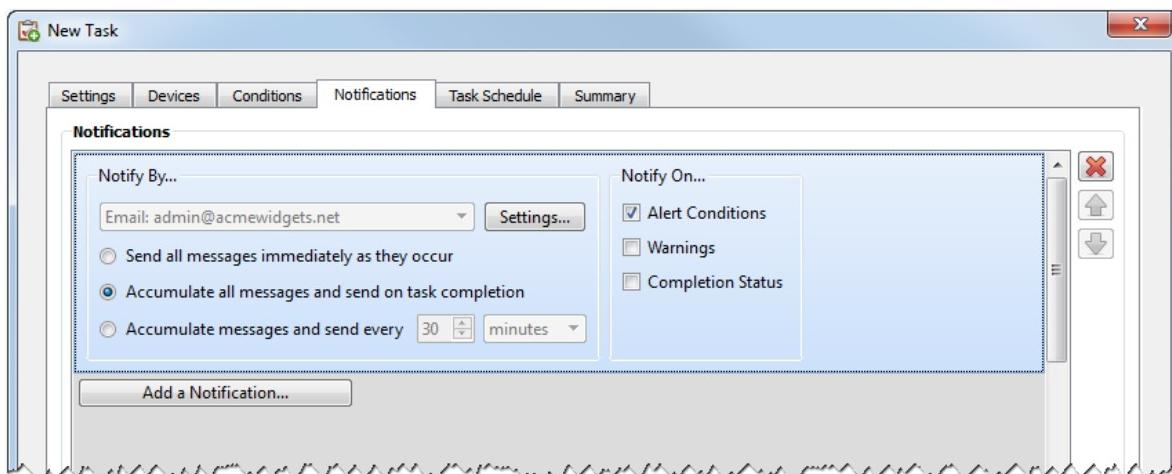
10. On the **Task Schedule** tab select *Start Options: **Scheduled***, and select the frequency at which the task will be performed. In this example the task will run once a week on a Monday at 9 AM.
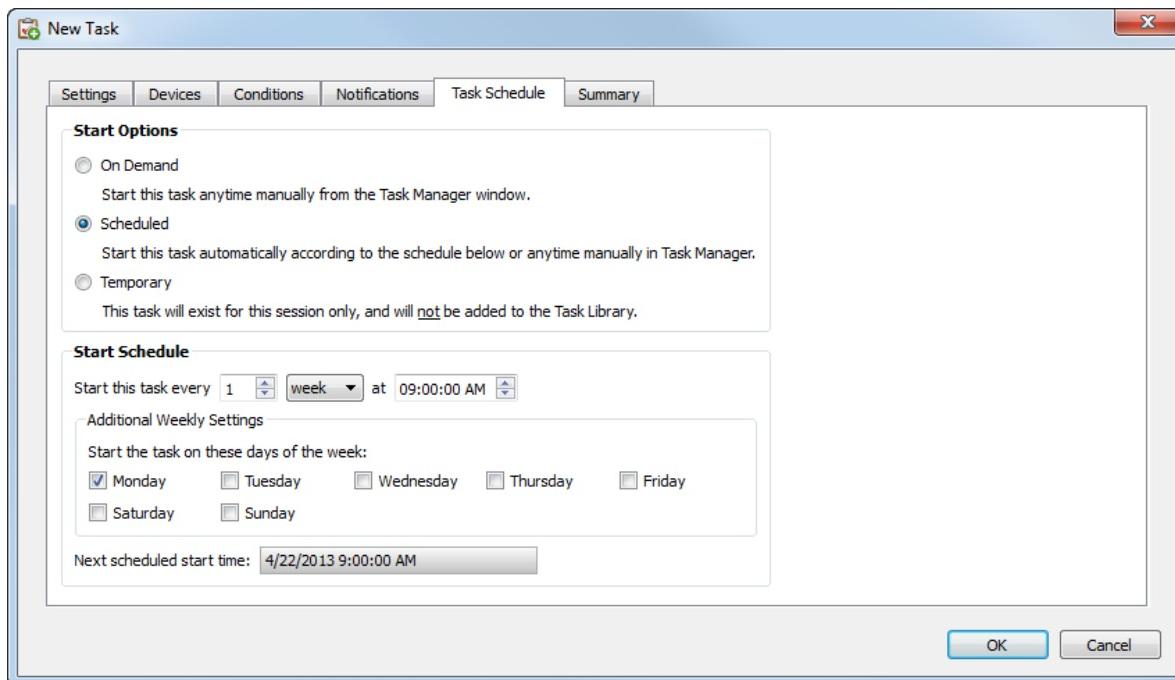
11. On the **Summary** tab review the Task settings, and click **OK**.

12. There will now be a new task listed in the **Inactive Tasks** list that will automatically run on the selected day and times. The green background in the **Next Start Time** column indicates the task will run automatically at the time indicated.

Example Task: Check for displays reporting a diagnostic error condition

In this example, a task to check to see if a display device is reporting a diagnostic error condition is created. If a diagnostic error is returned from a device, an alert email will be sent to the administrator. The task will be set to check each device every 30 minutes during weekdays between 8 AM and 8 PM. Most NEC display devices can report diagnostic error conditions such as overheating, fan failures, lamp failures, etc. (if applicable).

1. Create a new Task by clicking the New Task ![icon] toolbar button, or selecting **New Task...** from the **Tasks** menu.

2. Enter a **Name** and **Description** for the task to indicate the purpose of the task.
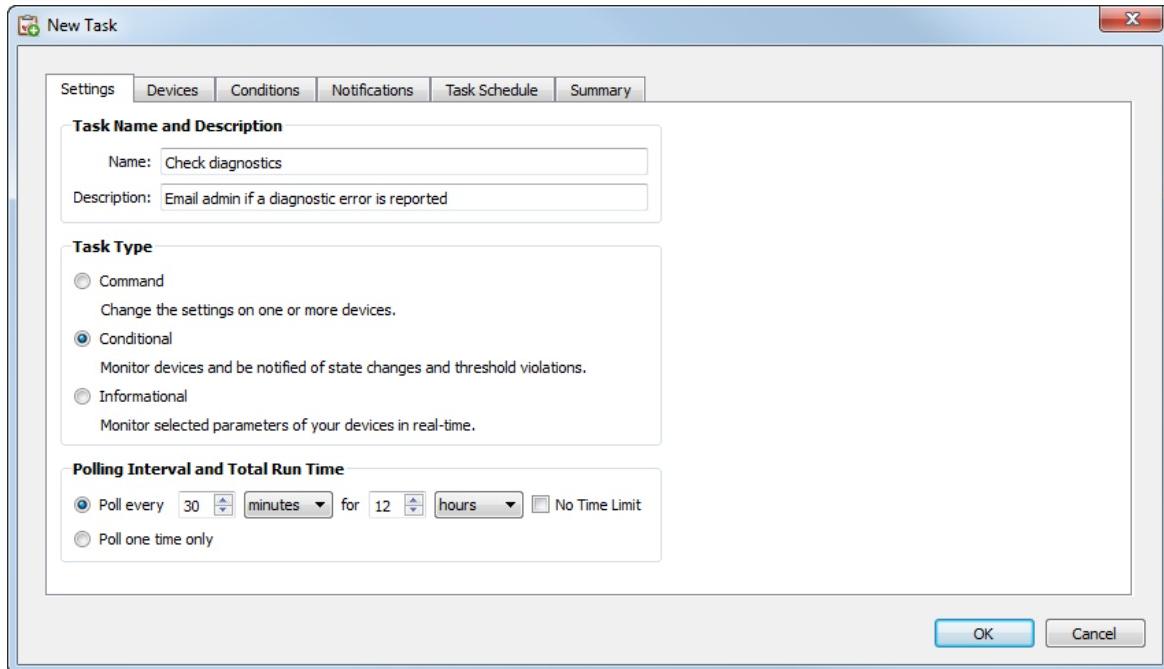
3. Since the task will check the condition of a value, select the *Task Type:* **Conditional.**

4. The task will check each device every 30 minutes, so set the **Poll Every** interval to 30 minutes. It will run from 8 AM to 8 PM, so set the run time to 12 hours.

5. On the **Devices** tab, select the devices to be checked.

6. On the **Conditions** tab, open the **Display Device Information** section on the **Controls** list, and select **Diagnostics** to add it to the list of conditions.

7. Change the condition to *is not* and *Normal* as the value.
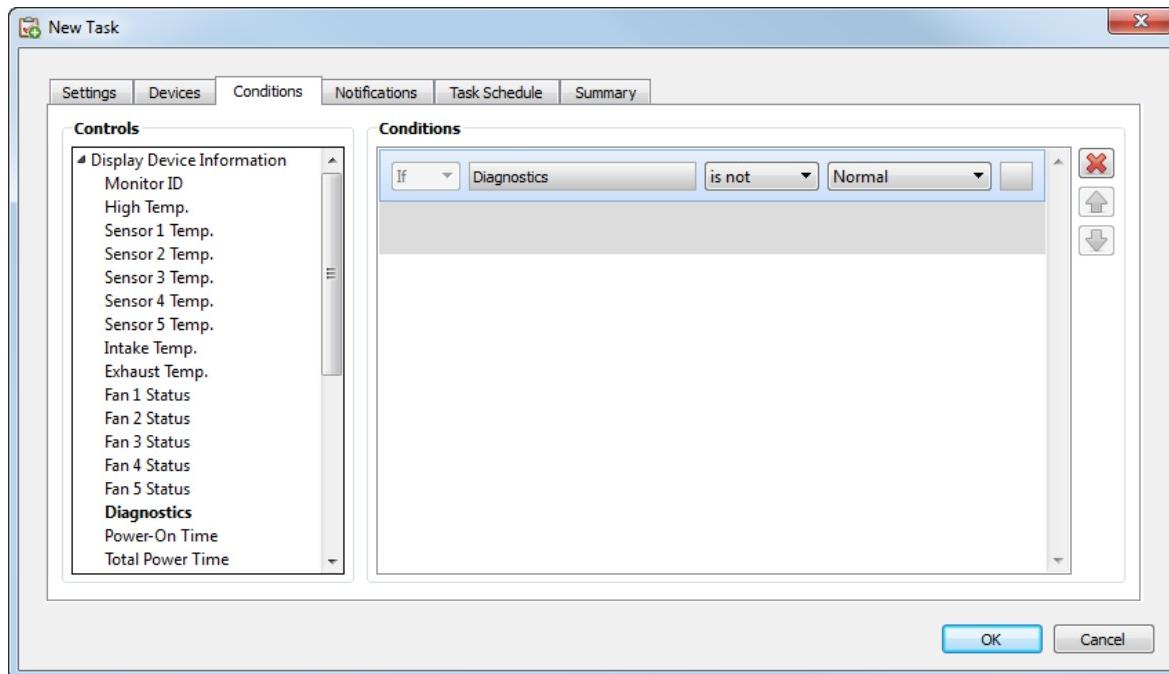
8. On the *Notifications* tab, click *Add a Notification...*, enter the recipients email address and click *OK*.

9. Since the administrator will want to know immediately for each device if the condition is true, select *Send all messages immediately as they occur*. Since the administrator will want to be notified if a device is unable to be reached over the LAN, select *Warnings* in the *Notify On...* section, as well as *Alert Conditions*. A warning will be generated if a device can't be reached for some reason.
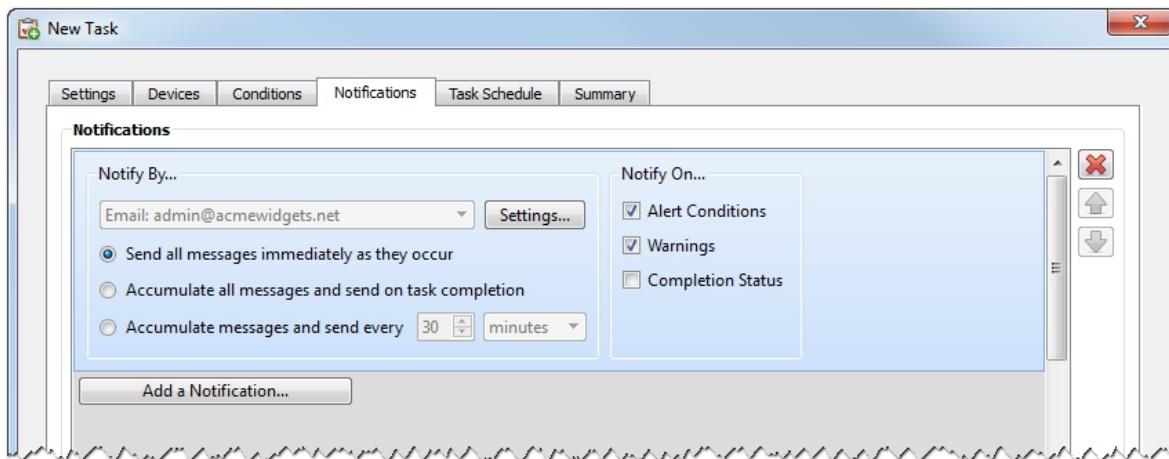
10. On the **Task Schedule** tab select *Start Options: Scheduled*, and select the frequency at which the task will be performed. In this example the task will on weekdays starting at 8 AM and weekends will be skipped.
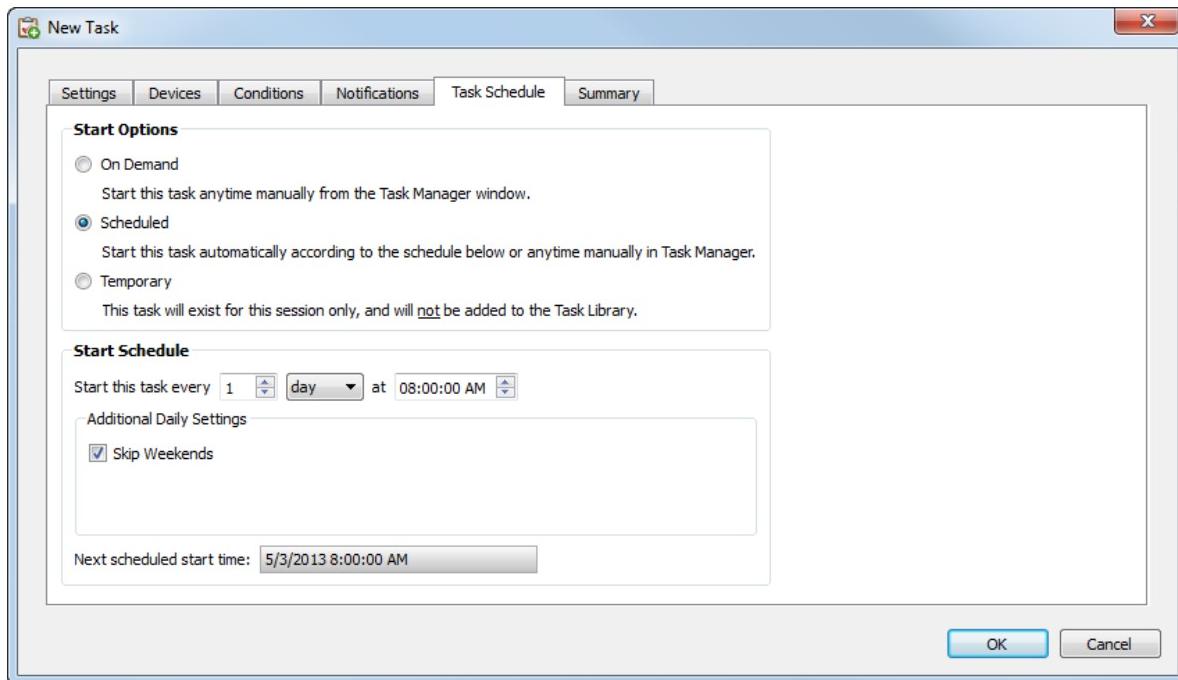

11. On the **Summary** tab review the Task settings, and click **OK**.

12. There will now be a new task listed in the **Inactive Tasks** list that will automatically run on the selected days and times. The green background in the **Next Start Time** column indicates the task will run automatically at the time indicated.

Example Task: Configure new displays with multiple preset settings

In this example a task is created with a list of settings to be applied to displays. This could be a standard configuration that is needed for all new displays in a particular application or environment. Having these changes performed by a task means that the process can be automated, thus reducing the time taken and risk of error due to mis-adjustment.

Once a task has been created with the desired settings, it can be run on demand and applied to new displays by modifying the devices selected in the task.

1. Create a new Task by clicking the New Task ![icon] toolbar button, or selecting **New Task...** from the **Tasks** menu.

2. Enter a **Name** and **Description** for the task to indicate the purpose of the task.

3. Since the task will change the settings on displays, select *Task Type:* **Command**.

4. On the **Devices** tab, select at least one already existing device of the same type. This way the Commands list will be populated with the correct controls for the device type.

5. On the **Commands** tab, select and configure the values for each of the settings to be applied for the display configuration.

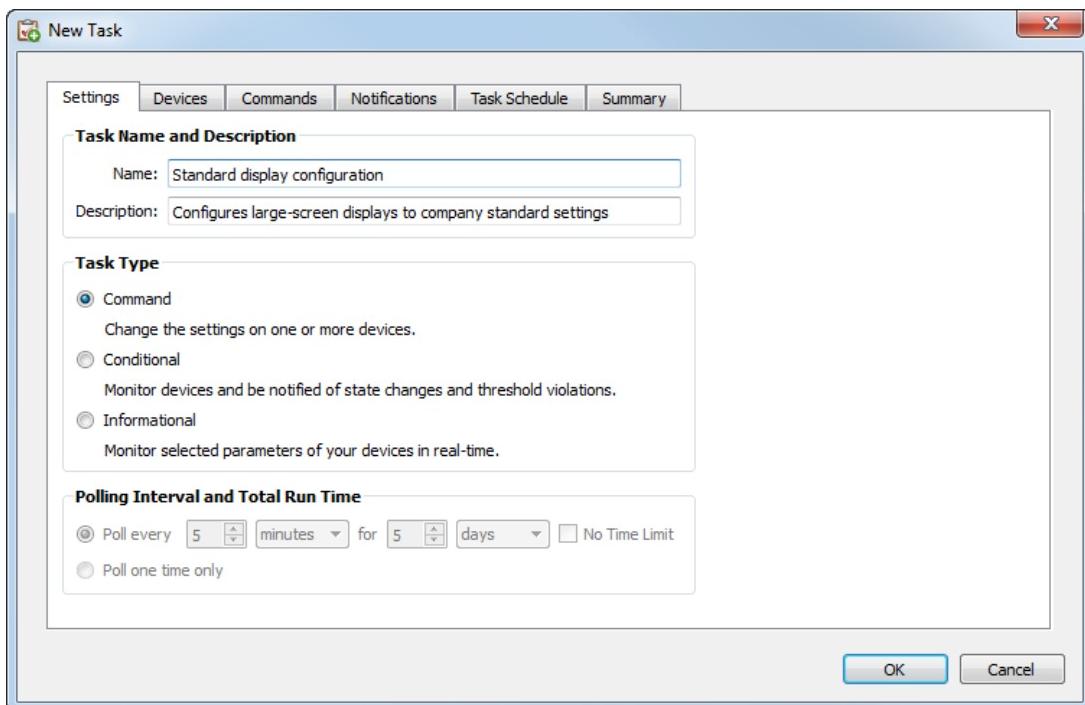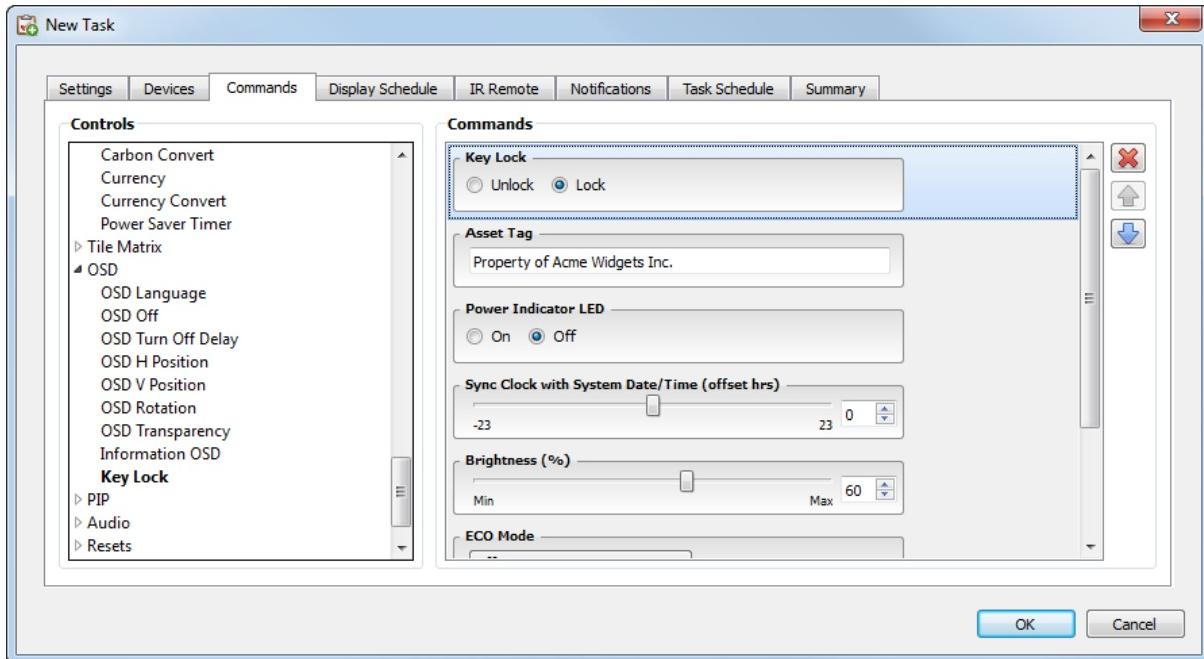6. On the **Task Schedule** tab, select **On Demand** since the task will be run manually on new displays.

7. On the **Summary** tab review the Task settings, and click **OK**.

8. There will now be a new task listed in the **Inactive Tasks** list that must be run manually.

9. To run the task on new displays, first add them to the device tree, then modify the task by clicking the ▨ **Properties** icon. On the **Devices** tab, modify the selection to include the new displays to configure. Click **OK** and then run the task by clicking the ▶ **Run** button.

Example Report: Query basic device information and export to Excel

In this example a report is created that will query basic information about all of the devices in the Device Tree. In order to avoid unnecessarily re-querying devices too often, a report that only queries devices if the information about them is older than two days. This will keep the information in the database up to date.

Once the report has completed, the results are exported to Excel so the data can be used and manipulated externally.

1. Create a new Report by clicking the New Report ![icon] toolbar button, or selecting *New Report...* from the *Reports* menu.

2. Enter a *Name* and *Description* for the report to indicate the purpose of the report.
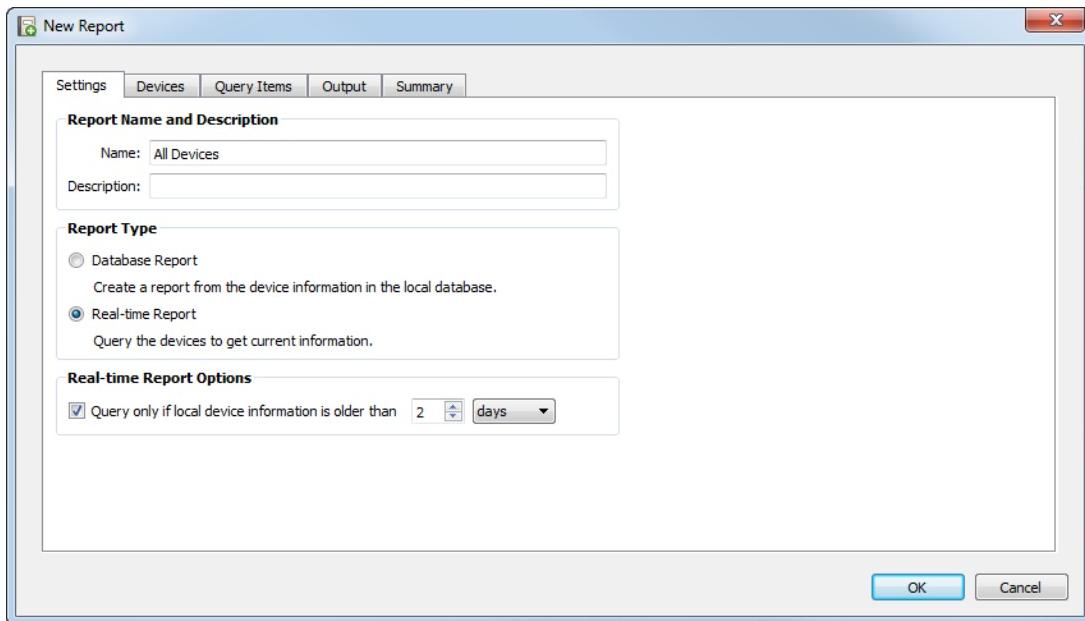
3. Since the report will actually query devices, select *Real-time Report* as the *Report Type*. Select *Query only if local device information is older than* and select *2 days* in order to **avoid unnecessarily re-querying devices and also keep the database up to date.**

4. On the *Devices* tab, select the devices to be included in the report.

🖉*Note:* *Windows computers and daisy-chained large-screen displays are shown in the device tree in the Devices tab* without *any child devices (attached displays for Windows computers, and individual daisy-chained large-screen displays for daisy-chain hosts). These child devices will be determined when the Report operation is actually run, and automatically added to the report and the device tree.*

5. On the *Query Items* tab, select the desired items to query and include in the report.

6. On the **Output** tab select the **Output to file** option, click **Select...** and choose a file type and name.
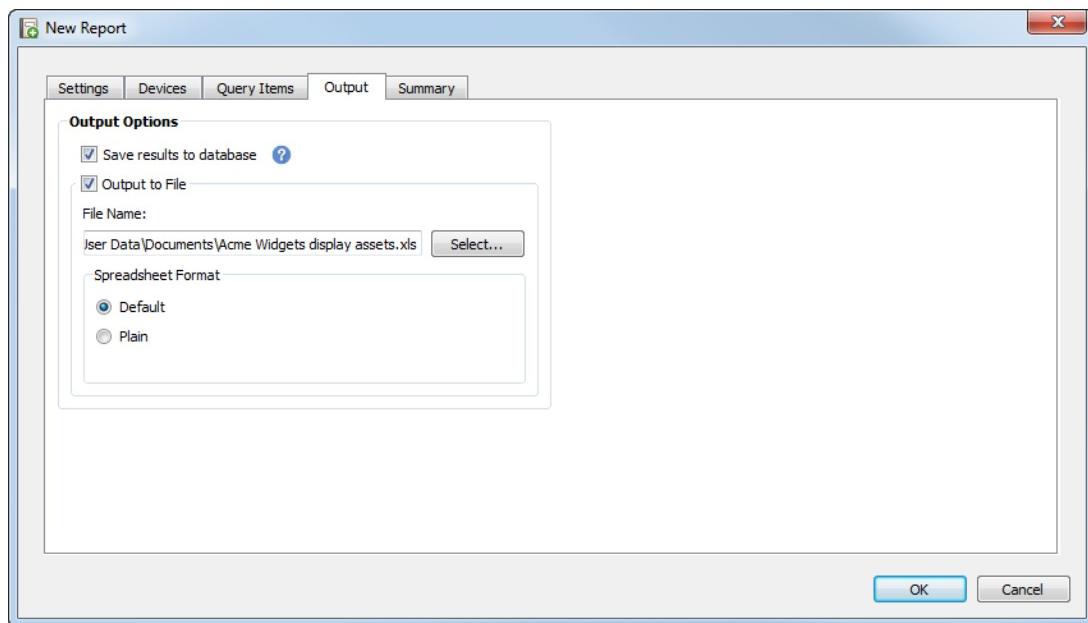
7. On the **Summary** tab review the Report settings, and click **OK**.

8. There will now be a new report listed in the **Inactive Reports** list.

9. Click the ▶ **Run** button to start the report. Once the report has completed querying all of the selected devices for which the database information is more than two days old, the spreadsheet will be automatically opened.

Chapter

11 Frequently Asked Questions

Question: Can Task schedules be created with different start times for different days of the week - for example to power on displays at different times on different days?

Answer: Yes. Simply create a Task with the desired Start Schedule times and days of the week to run. Then duplicate that task and edit it to change the start times and other days of the week. Repeat as necessary. So the end result is that there are multiple Tasks performing the same operation, but on different days and start times.

Question: Can two instances of the application share the same NaViSet Administrator database file simultaneously?

Answer: No. The database can only be opened by one instance at any one time.

Question: Can the database used by NaViSet Administrator be accessed by other software?

Answer: No. The database format is proprietary. Device information can be exported via delimited text files and Excel files.

Question: Can RS232 Splitters or Y adapters be used to connect multiple displays?

Answer: No. This will result in communication collisions and is an illegal topology for RS232 communications.

Question: What happens when there is a time change such as DST (Daylight saving time)?

Answer: Tasks that are currently inactive will automatically be rescheduled to take into account the new time from the host computer whenever it is changed. If tasks are running when the time change occurs, a message will be included in the task results indicating the time change.

Question: If the same brightness and color settings are applied to multiple displays will they look exactly the same?

Answer: For most display models, no. Since each display is different due to the age, usage, and normal tolerances, the same color setting values applied to different displays will result in some brightness and/or color differences.

Question: The results of a Task show numerous *Last Query Still Running* warning messages. What does this mean?

Answer: The task has not completed before the next time it is scheduled to poll has been reached. Increase the polling interval time to allow the task to complete on all of the devices specified.

Question: What happens to any scheduled tasks if NaViSet Administrator is closed? Do they need to be rescheduled?

Answer: NaViSet Administrator needs to be running in order for a scheduled task to start and run. If it is not running when a task is scheduled to start, then the task will be rescheduled for the next time period as soon as the application is run again. All tasks are automatically rescheduled whenever NaViSet Administrator is started and do not need to be manually rescheduled, however tasks missed will not be caught up.

Question: How much network bandwidth does NaViSet Administrator use?

Answer: Communications to each device uses a minimal amount of network bandwidth - typically several kilobytes for most operations.

Question: How long would it take to perform an operation on a large number of devices?

Answer: NaViSet Administrator can communicate to multiple different devices in parallel, which speeds up operation by allowing simultaneous connections, and allows more operations to be performed while waiting for other devices to respond to commands. Up to 30 connections can be used by selecting *Maximum simultaneous network connections* in the application *Preferences* (see page 79).

Assuming that all 30 connections are used with the maximum possible efficiency, then operations on all devices will complete at 30 times the speed of performing the operation on all devices in serial using one connection. Depending on the device, connection type, and operation being performed, operation times are typically between 5 seconds to 1 minute.

Example: Approximately how long would it take to power off 1000 displays?

Assuming a power off operation takes 15 seconds to perform on a device, if performed serially using one connection the total time would be about 15 seconds x 1000 = 15000 seconds (over 4 hours). If 30 connections are used, then the time is 15 x 1000 ÷ 30 = 500 seconds (just over 8 minutes). It is assumed that no other operations are being performed at the same time.

Question: Is it possible to connect to a display that is connected via RS232 to the local computer?

Answer: Yes. Install and configure the *LAN to RS232 Bridge* application on the local computer. Add the display to the device tree in the same way as any other device, but use either the computer's actual IP address, network name, or the IP address 127.0.0.1.
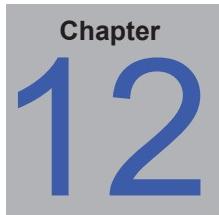
Chapter
12 Troubleshooting

Problem: Unable to connect to a Windows Computer via WMI

If an error occurred when performing any *Test* operation, follow these troubleshooting steps:

- Confirm that the remote computer is powered on and fully booted.
- Confirm that the computer name or IP address is correct.
- Confirm that the user credentials entered are correct for an administrative user on the computer or domain administrator.
- Confirm that the Windows Firewall is not blocking access to WMI. See page 40 for more details.
- If the Windows computers on the network are part of a Windows Workgroup and not a Domain, the default UAC (User Account Control) security settings will not allow access to WMI, even if the Firewall is disabled.

Note: *Installing either the DDC/CI or RS232 WMI Providers will automatically configure the UAC (User Account Control) settings to allow access to WMI. The Windows Firewall settings are configured automatically when installing on a computer running an **English** version of Windows. **Other language versions of Windows might not be configured automatically due to the different localized naming of WMI, and may need to be manually configured.***

Problem: Unable to communicate with an NEC large-screen display

If an error occurred when performing any *Test* operation, follow these troubleshooting steps:

- Confirm that the display is a supported model and is powered on.
- Confirm the IP address of the display is correct. If using the LAN to RS232 Bridge make sure the IP address or host name of the Windows computer is correct.
- Confirm that the Monitor ID being used to connect to a display matches the Monitor ID set on the OSD.
- If using the *LAN to RS232 Bridge* utility, confirm that it is configured correctly and has been started. Confirm that the Windows Firewall has been opened correctly for the Network Location Type being used. See "Troubleshooting the LAN to RS232 Bridge" on page 106.
- Confirm that the first display is correctly configured to use RS232 or LAN, depending on the connection type. See the configuration information starting on page 43 for details.
- Confirm that any daisy-chained displays connected to the first display are configured to use RS232 and have unique Monitor IDs.
- Confirm that any daisy-chained displays are connected using crossover / NULL modem type RS232 cables, and are connected to the correct IN and OUT sockets on the displays.
- If the display is connected directly to LAN (not using the *LAN to RS232 Bridge*), try connecting to the display's internal web host using a web browser and enter the IP address of the display to verify connectivity via HTTP.
- Try resetting the LAN settings on the display and reconfiguring. Power Off and On the display.

Problem: Unable to communicate with an NEC projector

If an error occurred when performing any *Test* operation, follow these troubleshooting steps:

- Confirm the IP address of the projector, or IP address or Windows computer name of the Windows computer (if using the *LAN to RS232 Bridge*) is correct.

- If using the *LAN to RS232 Bridge* utility, confirm that it is configured correctly and has been started. See "Troubleshooting the LAN to RS232 Bridge" on page 106.

- If the projector is connected directly to LAN (not using the *LAN to RS232 Bridge*), try connecting to the projector's internal web host using a web browser and enter the IP address of the projector to verify connectivity via HTTP.

- Some projector models require the communications setting to be manually configured between RS232 and LAN via the On Screen Display. Select the appropriate setting for the connection being used.

Appendix

A

Comparison of connection methods for NEC large-screen displays

	Connection Method			
	Direct LAN	**LAN to RS232 Bridge**	**RS232 WMI Provider**	**DDC/CI WMI Provider**
Host Windows Computer Required	No	Yes	Yes	Yes
Operation Speed	Fastest	Fastest	Slowest	Average
RS232 Daisy Chain Supported	Yes	Yes	Yes	No (multi-monitor on computer is supported)
Control when remote host computer is powered down or not functional	N/A	No	No	No
Control without user logged in to remote host computer	N/A	No	Yes	Yes
Use and select any video input	Yes	Yes	Yes	No (Current input only. Must be VGA or DVI.)
Configuration of Monitor IDs and number of displays on host computer	N/A	No configuration necessary	Must be specifically configured on the host computer	No configuration necessary
Maximum cable length	100m	10m	10m	3m
Additional limitations		One COM port supported	Multiple COM ports supported	No splitters, KVMs, or Video over CAT5/6. Two-way communications using DisplayPort or HDMI inputs is not supported.
Supported on SBC (Single Board Computer)	N/A	Yes	Yes	No
IP Address	IP address required for display	Shares IP address of host computer	Shares IP address of host computer	Shares IP address of host computer
Network Security	None	None	Yes. Requires administrator credentials.	Yes. Requires administrator credentials.
Typical Standard Update Time	20 seconds per display	20 seconds per display	20 seconds per display + 10 seconds x the total number of displays	30 seconds
Typical Full Update Time	120 seconds per display	120 seconds per display	60 seconds per display + 10 seconds x the total number of displays	75 seconds
See connection diagram on	page 43	page 44	page 45	page 42

Daisy Chain RS232 vs. Individual LAN Connections

The following table shows compares connecting large-screen displays individually via LAN vs. using an RS232 daisy chain between displays:

	Connection Method	
	Daisy Chain RS232	**Individual LAN Connection**
Operation Speed	Slower. Limited to one operation on one display on the daisy chain at a time.	Faster. Simultaneous (parallel) operations to each display (up to maximum limit set in the application Preferences).
IP Addresses	One IP address required for all displays.	One IP address for each display.
Connectivity	Single RS232 cables daisy chained between displays.	Individual LAN cable runs from each display to a hub/switch/router.
Robustness	Failure or removal of one display or cable will disrupt communications to all others further along the daisy chain.	Failure of a display or cable will not impact communications to other displays.

Appendix

B Wake-on-LAN (WoL) Configuration

In order to wake up a remote computer using the WoL protocol, the computer must be configured to enable the WoL functionality.

On most computers WoL needs to be enabled in both the BIOS (Basic Input/Output System) settings and in Windows. Consult the computer's documentation for information on how to access and enable the BIOS WoL settings if applicable.

In Windows, the WoL functionality is integrated into the *Device Manager*, and is available in the *Power Management* tab of each network device.

When performing a Wake On LAN operation in *NaViSet Administrator*, a *magic packet* will be broadcast on the network interface selected in the *Preferences* to the MAC address of the computer. The *magic packet* is sent as a UDP datagram on port 9. Be sure that firewalls and routers do not filter or block this.

Note: In most cases WoL will not work outside the local network or current network subnet due to the broadcast nature of the protocol and configuration of most routers.

Examples of network adapter Wake on LAN / Wake On Magic Packet settings:

Appendix
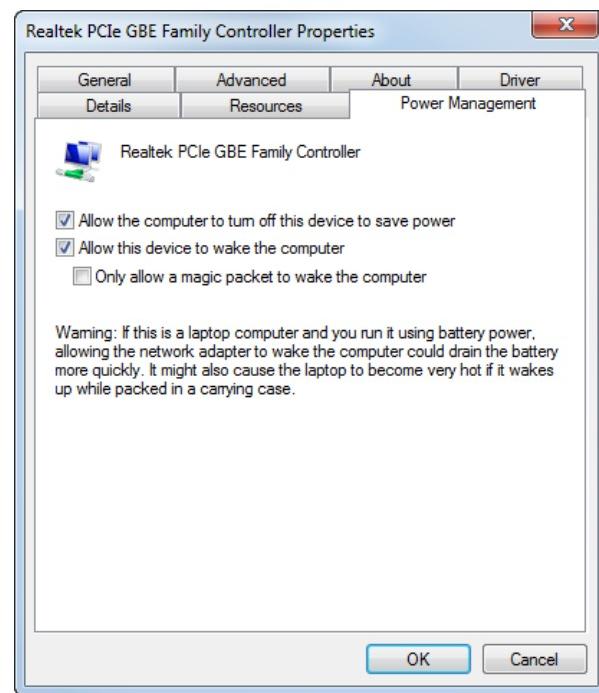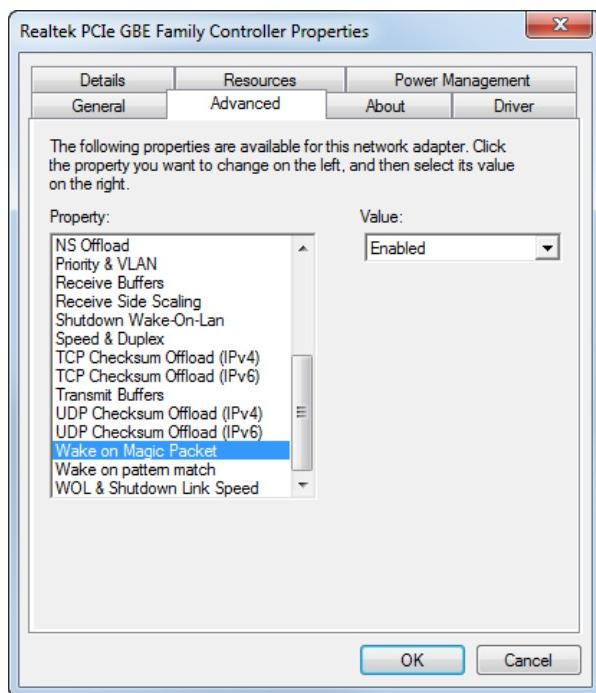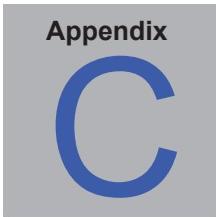
C Using Open Hardware Monitor

NaViSet Administrator can interface with the free open-source hardware monitoring **Open Hardware Monitor** application in order to provide extended monitoring of a remote Windows computer's hardware status, such as temperatures and fan speeds. These extra parameters on the status of a remote computer can be useful in checking for abnormal conditions such as overheating, or cooling fan failures which could lead to a failure or misoperation of the computer.

✎Note: *Since NaViSet Administrator operates by polling devices, and not by remote devices automatically signaling of an abnormal condition, a Task must be used to periodically query the remote devices being monitored and check for an abnormal condition.*

Installing and Configuring Open Hardware Monitor

To use *Open Hardware Monitor* with *NaViSet Administrator*:

1. On the remote Windows computer that is to be monitored, install the **Open Hardware Monitor** application available from http://openhardwaremonitor.org.

2. Start the **Open Hardware Monitor** application.

3. In the **Options** menu, configure the application to **Run On Windows Startup**, and if desired to **Start Minimized**.

4. Confirm that the desired parameters are being monitored and reported within the application.

5. Leave the application running.

6. In *NaViSet Administrator*, select the remote Windows computer in the *Device Tree* and open the device's tab by double clicking the device.

7. On the device's **Info** tab click either **Standard Update** or **Full Update** to update the status information from the remote computer.

8. The supported parameters from *Open Hardware Monitor* will appear in the **Computer Status Information** table.

✎Note: *NEC is unable to provide support or assistance with Open Hardware Monitor, and is not responsible for it's operation, development, functionality, or availability.*

Supported Sensors

NaViSet Administrator supports reading CPU, GPU, and Main Board temperatures and fan speeds from *Open Hardware Monitor*. Since *Open Hardware Monitor* supports monitoring of a broad range of sensor types within the computer, devices are grouped into the following categories:

- CPU Temperatures 1 thru 8 in °C
- CPU Fan Speeds 1 thru 8 in RPM
- Main Board Temperatures 1 thru 8 in °C
- Main Board Fan Speeds 1 thru 8 in RPM

- GPU Temperatures 1 thru 8 in °C
- GPU Fan Speeds 1 thru 8 in RPM

Using in Tasks and Reports

The sensor values from *Open Hardware Monitor* can be used in *Tasks* and *Reports* in NaViSet Administrator. For example a *Task* can be created to issue an alert if a fan speed drops below a certain RPM, or if a temperature exceeds a certain value.

When a computer is selected as a device in a *Conditional* type *Task*, the list of Controls in the conditions will contain a section called *Computer Status*, which contains all of the sensor categories that can be used from *Open Hardware Monitor*.

In the following example the CPU Temperature 1 sensor is used to create an alert of the value exceeds 50°C, or of the CPU 1 fan speed falls below 500 rpm.
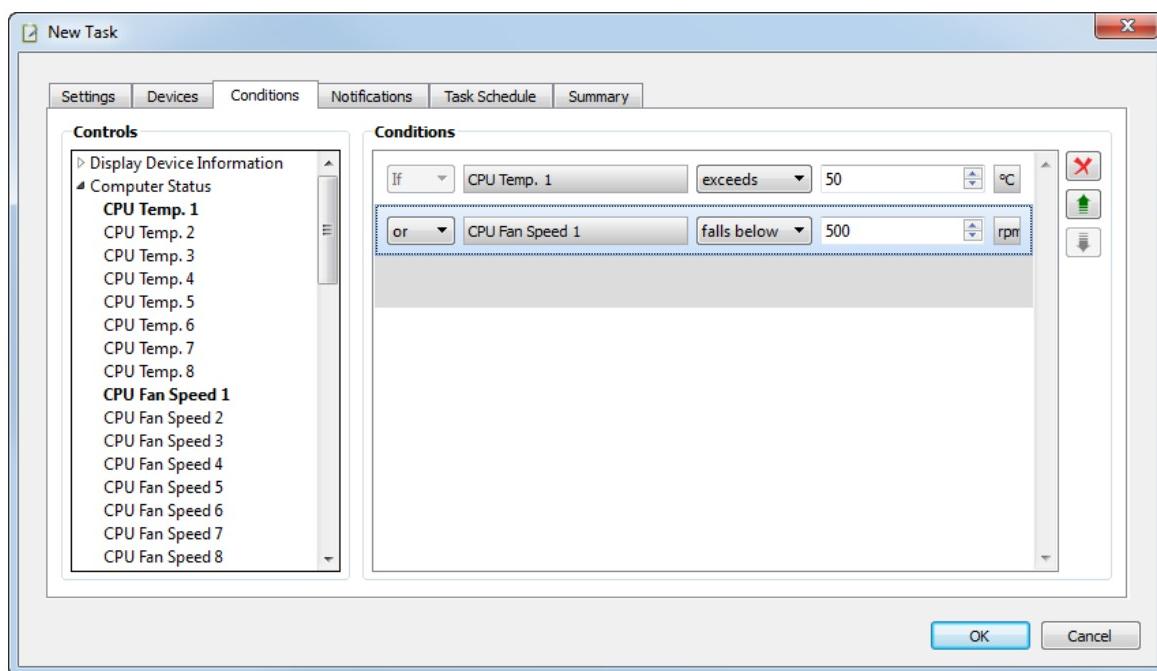
LAN to RS232 Bridge Configuration

About

The *LAN to RS232 Bridge* is a utility that allows remote access via LAN to NEC large-screen displays or projectors that are connected to a remote computer via an RS232 connection. This essentially makes the Windows computer appear to be the LAN connection of a large-screen display or projector. It is *bridging* communications between LAN and the RS232 port to the display. Applications like *NaViSet Administrator* can then access displays by connecting to the IP address of the Windows computer, and sending requests just as if the display was connected via a built-in LAN connection.

This allows a host computer to effectively share it's LAN connection with the display, allowing remote access to the display via LAN, but while only using one LAN connection.

This is useful for:

1. Large-screen display and projector models that have an RS232 connection, but no built-in LAN connection.

2. Situations where it is not possible or desirable to use two LAN connections and IP addresses (one for the host computer and one for the display).

See pages 44, 47, and 49 of the *Configuring Devices* chapter for complete information on connecting and configuring devices for use with the *LAN to RS232 Bridge*.

Operation

The utility runs in the Windows *System Tray* and waits for incoming requests via LAN. When a request is received, it is then forwarded on to the selected RS232 COM port to the display. Replies from the display(s) are then sent back over LAN.
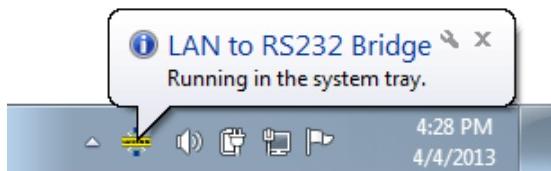
✎Note: Windows may hide the system tray icon by default. Click the **Show Hidden Icons** button in the system tray to configure which icons are shown on the system tray.

Limitations

There are several important limitations to using this utility:

1. The application runs in the Windows System Tray, and only loads when a user has logged into the computer. Therefore connectivity to the display will not be available until a user has logged in.

2. Since the application settings are stored on a per-user basis, be sure to configure the settings while logged in as the user that will be normally logged into the computer.

3. Communications will not be possible while the host computer is in power off, sleep, or hibernate modes.

4. Only one COM port can be used. If multiple large-screen displays are to be connected, they must be daisy-chained from the RS232 OUT on the first display connected to the computer.

5. Only one simultaneous remote connection is allowed. If a connection request is received while another connection is already in use, it will be refused.

6. The host computer must allow TCP LAN traffic on port 7142. Firewalls must be configured to allow unfiltered traffic on this port. The installer will automatically open this port on the Windows firewall.

Configuring the LAN to RS232 Bridge

1. Install the **LAN to RS232 Bridge** from the NaViSet Administrator 2 installer packages.

2. Run the **LAN to RS232 Bridge** application which can be found in the **Start → Programs → NEC Display Solutions → LAN to RS232 Bridge** menu.
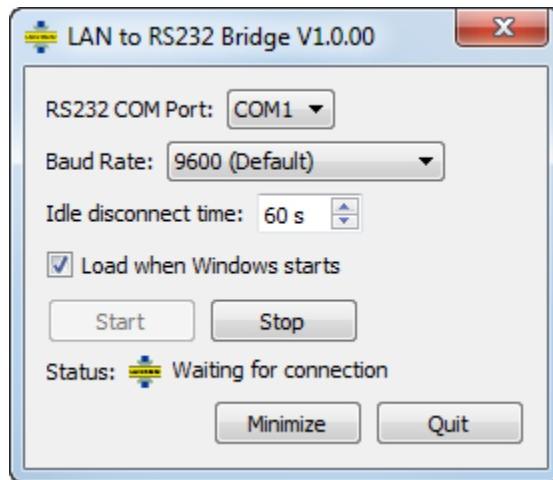
3. Select the **RS232 COM Port** that the display is connected to from the list.

4. Select the correct **Baud Rate** for the connected display. All NEC large-screen displays use 9600 baud. Projectors can use 9600, 19200, or 38400 baud. Be sure the baud rate selected matches the baud rate configured in the projector's On Screen Display.

5. To automatically load the LAN to RS232 Bridge application when Windows starts, select **Load when Windows starts**. If this is not selected, it must be manually started each time Windows starts.

6. Click **Start** to start the bridge operation. It will listen for incoming connections on LAN. When a connection is received, the **Status:** indicator will change from **Waiting for connection**.

7. When finished configuring the settings, click the **Minimize** button to close the window and keep the application running in the system tray.

8. Clicking **Quit** will close the application and it will no longer accept incoming connections.

Troubleshooting the LAN to RS232 Bridge

Follow these troubleshooting steps if problems are encountered with connecting to the LAN to RS232 Bridge utility:

1. Test the connection and configuration by connecting from another computer using the IP address of the computer running the LAN to RS232 Bridge utility.

2. Check that the utility has been started.

3. Watch the *Status:* in the configuration window. It will show if a remote connection has been attempted. If no remote connection is made, check the firewall settings. The application is listed in the *Windows Firewall* as *LAN to RS232 Bridge Application*. Make sure it has permissions on the *Network Location Type* being used for the remote network connection. Network Location Types are typically *Home/Work (Private)* and *Public*.
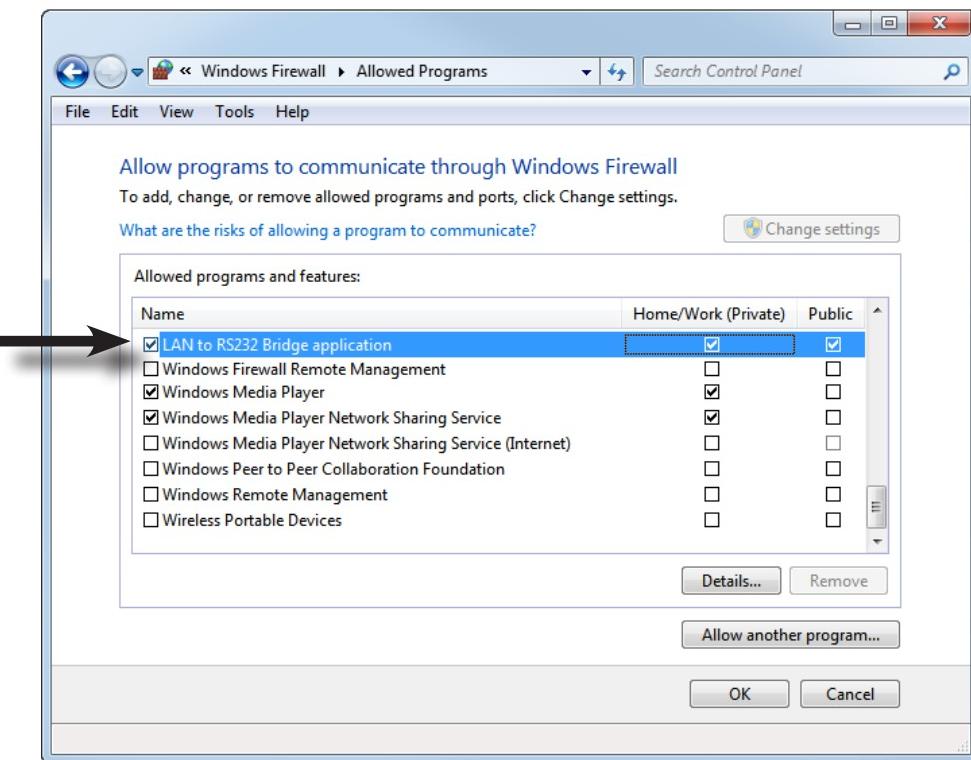
4. Large-screen displays only: Check that the display has been configured to use the RS232 connection and not LAN.

5. Large-screen displays only: Check that the Monitor ID is set correctly on the display.

6. Large-screen displays only: Check that the RS232 cable is connected to the RS-232C INPUT on the display.

7. Make sure the selected *Baud Rate* is selected is correct for the display type and model being used.

8. Check that the RS232 cable to the display is a crossover cable type and is connected to the RS232 input on the display.

9. Check that another application isn't using the COM port.

Appendix

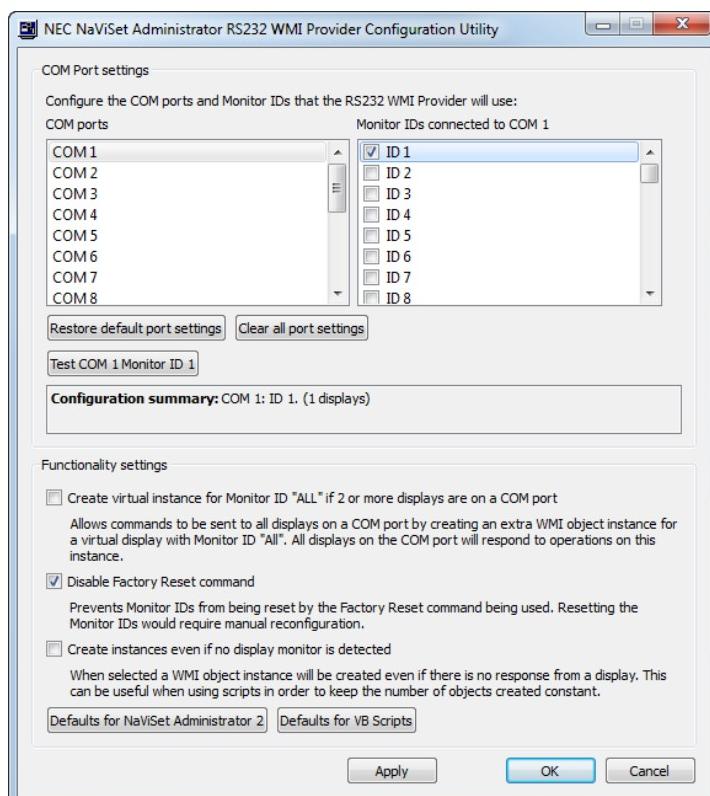# E   RS232 WMI Provider Configuration

About

The *RS232 WMI Provider* is installed on remote computers that have compatible NEC large-screen displays with an RS232 communications (COM) port. It will receive queries and commands from the NaViSet Administrator application via WMI, and communicate these commands to the display via RS232. The WMI Provider is a supplier, or *provider*, of the monitor metadata information to the NaViSet Administrator application. It is a completely background process that gets loaded temporarily whenever a request or command is received and therefore has no interaction with the users on the remote computers.

Note: *There are several different methods of accessing NEC large-screen displays remotely. Please see Appendix A on page 99 which provides a comparison of the different types, their benefits and drawbacks. Using the RS232 WMI Provider with a large number of displays connected can result in slow operation since connectivity with each display must be confirmed before a command can be performed, and is therefore not recommended.*

Configuring

Unlike the *LAN to RS232 Bridge* utility, the *RS232 WMI Provider* must be locally configured with the number of displays connected, the Monitor IDs for each display, and the RS232 COM port(s) on the host computer to use.

A utility application called *RS232 WMI Provider Configuration Utility* is installed with the RS232 WMI Provider to allow these configurations to easily be made. This is accessed from the Start → Programs → NEC Display Solutions → RS232 WMI Provider menu.

The configuration utility is used to make the following configuration settings used by the WMI Provider:

1. Configuring the RS232 COM ports used to communicate with the NEC display(s).

2. Configuring the Monitor IDs to use with each display (which must match the settings on each display)

3. Testing the communications with each display.

4. Configuring various advanced settings that impact the behavior of the WMI Provider.

Follow these steps to plan and configure the settings for use with NaViSet Administrator:

1. Identify the COM port numbers on the host computer that will be used to communicate with the display(s).

2. Connect the display(s) to the host computer using RS232 crossover cables. Be sure to correctly identify the RS232 IN and OUT connections on the display. The computer will connect to the RS232 IN on the display.

3. Configure the Monitor IDs for each display using the On Screen Display on each. If multiple displays are being used with an RS232 daisy-chain connection, then each display on the chain must have a unique Monitor ID.

4. In the configuration utility application click the **Clear All Port Settings** buttons to reset any previous configurations.

5. Select the COM port being used on the host computer in the list.

6. Next select the Monitor ID for the first display and make sure it is checked.

7. Click the **Test COM n Monitor ID x** button to test the communications with the display (where **n** and **x** are the COM port number and Monitor ID). If the communications is successful, the model name and serial number of the display will be shown. See *"Troubleshooting" on page 97* if the display is not detected.

8. Repeat steps 5 thru 7 for all remaining displays.

9. Verify the configuration settings in the **Configuration Summary** section.

10. If the WMI Provider is being used with the NaViSet Administrator 2 application, make sure the **Defaults for NaViSet Administrator 2** is selected.

11. Click **Apply** or **OK** to close.

12. The RS232 WMI Provider is now ready for access by remote. Try connecting by adding the computer as a **Windows computer on LAN (WMI)** in the NaViSet Administrator application.

Advanced Settings

The RS232 WMI Provider has several advanced settings for use in certain configurations and scenarios.

Create virtual instance for Monitor ID "All" if two or more displays are on a COM port

This setting allows commands to be simultaneously sent to all displays on a particular COM port by creating an extra WMI object instance for a virtual display with Monitor ID "All". All the displays on the COM port will respond to operations on this instance.

Note: *This setting is intended for use with WMI scripts, and not the NaViSet Administrator 2 application. It should <u>not</u> be selected when using the NaViSet Administrator 2 application.*

Disable Factory Reset Command

This setting prevents the Monitor IDs assigned to each display from being reset by the Factory Reset command being used. Resetting the Monitor IDs would require that each display be manually re-configured via the On Screen Display.

Create instances even if no display monitor is detected

When this setting is selected, a WMI object instance will be created for each display configured in the WMI provider, even if there is no response from a display. This can be useful when using WMI scripts, because it keeps the total number and sequence of the WMI objects created constant.

Note: *This setting is intended for use with WMI scripts, and not the NaViSet Administrator 2 application. It should <u>not</u> be selected when using the NaViSet Administrator 2 application.*

Appendix

F

Windows Management Instrumentation

About WMI

Windows Management Instrumentation (WMI) provides fully integrated operating system support for system and applications management on a Windows computer. WMI provides a model of the configuration, status, and operational aspects of Windows operating systems, assisting management applications in creating solutions that reduce the maintenance and life cycle costs of managing Windows and hardware devices.

NaViSet Administrator is able to access a remote computer and read this information using WMI.

Without installing any additional software on a remote computer, NaViSet Administrator is able to report about many different items such as:

- Connected primary display monitor make, model, serial number, and resolution

- Make, model and serial number of the computer (if available)

- CPU type, speed and current usage

- Operating system version and service pack

- System memory size and current usage

NaViSet Administrator is able to enhance the amount of information available on the connected display monitors on a remote computer by installing a custom WMI Provider.

NaViSet Administrator WMI Providers

Two different WMI Providers are included with NaViSet Administrator; the *RS232 WMI Provider* (used for large-screen displays connected to the computer via RS232), and the *DDC/CI WMI Provider* (used for desktop displays and communicates using the video cable to the display).

✎*Note:* The RS232 and DDC/CI WMI Providers cannot both be installed at the same time on a computer.

The NaViSet Administrator WMI Providers should be installed on all remote computers that have compatible NEC display monitors. The WMI Provider receives queries and commands from the NaViSet Administrator application, via WMI, and communicates these commands to the display via DDC/CI or RS232. The WMI Provider is a supplier or provider of the monitor metadata to the NaViSet Administrator application. It is a completely background process that gets loaded temporarily whenever a request or command is received and has no direct interaction with the users on the remote computers.

In order to perform adjustments and advanced query functions, it is necessary to install one of the NaViSet Administrator WMI Provider on each remote Windows computer. If the WMI Provider is not installed, then NaViSet Administrator can still gather basic information about the main display connected to the computer by using standard built-in WMI classes. This information is limited to static metadata and so no adjustment of the display is possible. This basic information is available regardless of the model or make of display connected.

The NEC WMI Providers create a standard WMI Object that can be accessed not only from the NaViSet Administrator application, but also 3rd party asset management applications and also several other WMI interfaces such as VB Scripts.

Appendix

G

WMI VB Scripts

The DDC/CI and RS232 WMI Providers included with NaViSet Administrator allow connected NEC desktop and large-screen displays to be accessed and controlled using 3rd party asset management applications, and also via simple VB Scripts. This makes it very easy to perform custom operations if necessary, without the need to use the NaViSet Administrator application.

VB Scripts can be written to access the WMI **Properties** and **Methods** of the NaViSet Administrator WMI Providers. The WMI provider is a class called `Win32_AdvancedDesktopMonitor`, and exists in the `Root\CIMV2` namespace.

The various *Properties* and *Methods* available can be easily explored using either the Windows built-in WMI Tester application (WbemTest.exe), or the WMI CIM Studio and WMI Object Browser available in the Microsoft WMI SDK, or various 3rd party WMI tools.

Once the names and parameters of the desired *Properties* and *Methods* of the WMI Provider are known, they can then be accessed via a VB Script file.

VB Scripts are text files with a .vbs extension and can be run either from the command line using cscript.exe, or via the Windows GUI which runs wscript.exe.

Details of generating VB Scripts are beyond the scope of this manual. However several sample VB Script files are provided for reference on the NaViSet Administrator install media.

Sample VB Script files included:

`MonitorPowerOn.vbs`

Demonstrates how to control the monitor power by turning the monitor on.

`MonitorPowerOff.vbs`

Demonstrates how to control the monitor power by turning the monitor off.

`MonitorInfo.vbs`

Demonstrates how to read the WMI Properties to query and display some of the basic monitor metadata such as model number, serial number, date of manufacture etc. Most of this functionality is only available for displays when using the DDC/CI WMI Provider.

`ResetColor.vbs`

Demonstrates how to perform an action by calling a WMI Method. This will reset the monitor color settings.

`ReadBrightContrast.vbs`

Demonstrates how to perform an action by calling a WMI Method. This will read the values of the Brightness and Contrast controls and display them as a percentage value.

`SetMonitorBrightness.vbs`

Demonstrates how to perform an action by calling a WMI Method. This will set the display Brightness control to a percentage value. It will also display the Brightness control percentage value before and after the adjustment.

`IRRemote.vbs`

Demonstrates how to perform an action by calling a WMI Method. This will send a series of IR Remote commands to the display mimicking the IR Remote control (if available). The file should be edited to set the desired IR Remote

commands. This functionality is only available on NEC large-screen displays connected via RS232.

`ReadInternalTempSensors.vbs`

Demonstrates how to read the internal temperature sensors in supported displays.

Glossary

DDC/CI (Display Data Channel / Command Interface) - A two-way communications link between the video graphics adapter and display monitor using the standard video signal cable.

EDID (Extended Display Identification Data) - A data structure provided by a display to describe its capabilities to a video source.

OPS (Open Pluggable Specification) - A standardized slot design for digital signage devices and pluggable media players.

OSD (On Screen Display) - Display controls and status information superimposed on the screen image.

RS232 - A series of standards for serial binary single-ended data and control signals connecting between DTE (data terminal equipment) and DCE (data circuit-terminating equipment).

SBC (Single Board Computer) - A complete computer built on a single circuit board, with microprocessor, memory, and other features.

SMTP (Simple Mail Transfer Protocol) - An Internet standard for electronic mail (email) transmission across Internet.

SSL/TLS (Secure Sockets Layer / Transport Layer Security) - A protocol for encrypting information over the Internet.

USB (Universal Serial Bus) - A communication bus used to connect up to 127 devices such as keyboards, mice, scanners, color sensors, etc.

VESA (Video Electronics Standards Association) - An international non-profit corporation that supports and sets industry-wide interface standards for the PC, workstation, and consumer electronics industries.

WMI (Windows Management Instrumentation) - A set of extensions to the Windows Driver Model that provides an operating system interface through which instrumented components provide information and notification.

NEC